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ABSTRACT

In order to help vocational agriculture teachers develop competencies needed in giving instruction in off-farm agricultural occupations, 10 teachers were selected from Mississippi schools to help develop training programs, to conduct a home community survey, and to engage in a work experience program. After completion of their training, each participant initiated a program in his own school to train workers for agribusiness occupations. However, the placement of students in the training stations was not completely successful due to a lack of student interest and work scheduling problems. (JS)

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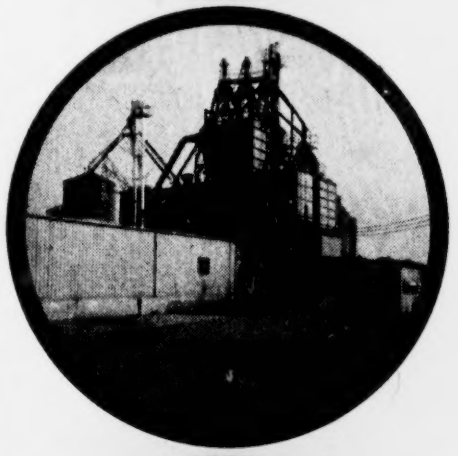

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Vocational Agriculture
Special Project Report

OE Project Number 2525
A Sub-project of a Technical Assistance Project Grant as a Part of the State Professional Development Program for Vocational Education Personnel in Accordance with Part F, Public Law 90-35

IN-SERVICE DEVELOPMENT OF VOCATIONAL TEACHERS FOR COMPETENCIES IN NON-FARM AGRICULTURAL OCCUPATIONS

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PREFACE

This project, "In-Service Development of Vocational Teachers for Competencies in Off-Farm Agricultural Occupations," is a further step in helping vocational agriculture teachers develop competencies needed in giving instruction in off-farm agricultural occupations. The primary differences in this project and previous efforts used in teacher education in off-farm agricultural occupations training is in the approach. The previous efforts of teacher education in this area consisted mainly of bringing interested teachers to the University for the usual type of workshops. This resulted in the preparation of excellent curriculum outlines for teaching off-farm agricultural occupations. These curriculum outlines were evaluated as being a step in the right direction by both vocational agriculture teachers and agricultural businesses and industries personnel. However, it was soon apparent that the teachers needed definite competencies relating to the internal operation of agriculturally related businesses and industries.

How to provide teacher competencies in the diverse job titles existing in the many types of agriculturally related businesses and industries became the concern of all teacher educators and State Staff personnel in vocational and technical education. It was the consensus of all concerned that the in-service teachers of vocational agriculture need specialized training and actual experience in agriculturally related businesses and industries located in the local school areas. Internship training in these agricultural businesses and industries was considered the best possibility of providing experiences that would develop the competencies needed by the teachers in developing the instructional programs needed by their students for entering in and succeeding in off-farm agricultural employment. The internship approach used in this project is believed to be in keeping in part with the intent and purpose of Part F, Sec. 553 of the Education Professions Development Act, Public Law 90-35.

Assistance in the development of the prospectus submitted to the U. S. Office of Education for this project and the conduct of project activities was provided by Dr. James F. Shill, Co-Director of the RCU, Mississippi State University. Special credit is due Dr. J. Roland Hamilton, Professor of Agricultural Education; George M. Walker, Associate Professor of Agricultural Education, both of Mississippi State University; Dr. W. F. Jackson, Head of the Department of Agricultural Education, Alcorn A. & M. College; Dr. Clayton Riley, University of Kentucky; and Mr. Dixon Mills, State Supervisor of Cooperative Education in Mississippi, for their contributions to the project. The Project Staff is grateful to the State Supervisory Staff in Vocational Agriculture who gave their wholehearted support in selecting teacher participants for the project and cooperating in many ways in helping to make the project a success. The project staff gives recognition to the many agricultural businesses and industries which cooperated in giving internship experiences to the teacher participants.

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SUMMARY OF THE PROJECT

Purpose and Objectives

The ultimate objective of this project was to upgrade in-service vocational agriculture teachers so that they will have sufficient competencies to plan, instruct, coordinate, and evaluate programs for untrained and disadvantaged persons as well as persons who can make normal progress to enter and progress in agricultural occupations in businesses and industries. In order to accomplish this major objective, the in-service professional development program offered opportunities for each teacher participant to engage in activities designed to fulfill the following specific objectives:

1. To increase competencies in determining the local outlook and skills necessary for placing students in non-farm agricultural occupations;

2. To develop understanding and competencies required in the organization and operation of non-farm agricultural businesses and industries;

3. To develop the ability to plan for and utilize non-farm agricultural businesses and industries personnel in the planning of, implementation of, and instructing in non-farm agricultural occupations programs;

4. To develop the competency to plan, implement, instruct, coordinate, and evaluate non-farm agricultural occupations programs for disadvantaged students as well as programs for vocational agriculture students who are not disadvantaged;

5. To develop the competency to coordinate student work experiences in agricultural businesses and industries; and

6. To develop competencies in total evaluation and reporting of programs in non-farm agricultural occupations.

Methods and Procedures

In June, 1970, the Agricultural Education Department at Mississippi State University was awarded an EPDA grant to conduct a project for "In-Service Development of Vocational Teachers for Competencies in Non-Farm Agricultural Occupations."

The design of the project was as follows: Nine experienced teachers of vocational agriculture and one post-secondary technical ornamental horticulture teacher were selected by an ad hoc committee composed of agricultural teacher-educators and vocational agriculture State staff members. These teachers were selected from schools in all geographic areas of the State that had a high percentage of students from low income families and where there was reasonable assurance of establishing relevant programs of non-farm agricultural occupations. The teachers selected were believed to be capable of providing quality instruction.

This project was conceived as consisting of seven phases as follows:

Phase I. Phase I of the project was the selection of an advisory committee to be utilized in planning, implementing, and evaluating the proposed in-service training program for vocational teachers. Representation on the committee was drawn from the following: Mississippi Division of Vocational Education, Agricultural Education Department of Alcorn A & M College, Guidance Education, Trade and Industrial Education Department, Mississippi State University, Non-farm Agricultural Industries, and Teachers of Vocational Agriculture.

Phase II. Phase II was considered as the initial orientation and training period. A one-week orientation period was held at Mississippi State University at the start of the program.

Phase III. Phase III was a designated period of intensive study of the communities to gather field data, analyze findings, and begin the initial planning for non-farm occupations training programs. This phase lasted approximately three weeks.

Phase IV. Phase IV was the work experience phase. Each participant worked three weeks in one or more agricultural businesses and industries.

Phase V. Phase V was a three-week training period at the University immediately following the period of work experience in the agriculturally related businesses and industries.

Phase VI. Phase VI was a period of implementation of training programs in non-farm agricultural occupations.

Phase VII. Phase VII was the final phase of the project and was a two-day debriefing period held at Mississippi State University.

Determining Needs for In-Service Training of Vocational Agriculture Teachers

The development of non-farm or off-farm agricultural occupations area has been given increasing emphasis since the passage of the 1963 Vocational Education Act. Enrollment statistics in different types of occupational training in Mississippi were obtained. These data indicated that a large number of those enrolled needed occupational training for gainful employment in occupations other than farming (production agriculture).

Statistical reports from various sources indicated that approximately 40% of present vocational agriculture enrollment had a critical need for occupational training that will fit them for employment in the State's 2,049 agriculturally related businesses and industries. Job opportunities in these businesses and industries ranged in jobs requiring competencies from semi-skilled to the managerial levels. Supervised work experience geared to the training for competencies to work in the State's agriculturally related businesses and industries is critically needed.

The Teacher Education Staff evaluated the Teacher Education Program designed to prepare teachers to work in agricultural occupations other than farming (production agriculture) and found that very little emphasis in the vocational agriculture program was given to training teachers for working with agriculturally related businesses and industries. Perhaps the primary cause was in teacher education program design. The experiences of the Staff in Agricultural Education at Mississippi State University indicated that the majority of the State's vocational agriculture teachers do not possess the competencies to provide the training needed by their students for entry into and progressing in agricultural occupations other than farming (production agriculture). The vocational agriculture teachers need specialized training and work experience in agricultural businesses and industries whereby they may develop the needed competencies in those who work in such industries. This required an internship-type training that vocational agriculture teachers had not received.

Needs of the Teacher Education Staff Evaluated

The teacher education staffs in agriculture at Alcorn A & M College and Mississippi State University were found to be well qualified in many respects to direct a specialized program of training for vocational teachers in agricultural occupations found in businesses and industries. But there was found to be a definite need for greater, more concerted and cooperative effort by agricultural

teacher-educators and agricultural business and industry personnel to formulate and implement innovative teacher-training programs and approaches. There was recognized a definite need for the agricultural teacher-education staff members to leave the University campus and get inside of the agricultural businesses and industries and learn, first-hand, the inner workings of these businesses and industries; and likewise, agricultural business and industry personnel need to get inside college classrooms and planning sessions to gain first-hand knowledge of what is involved in preparing teachers of vocational agriculture. This can best be done by an internship-personnel exchange type of program between teacher education institutions and agricultural businesses and industries. We were not successful in accomplishing this type of exchange.

In getting the project underway, four steps were followed. First, the Project Director and his staff spent much time with the Research Coordinating Unit located on the University campus and members of the advisory committee in planning the project. The results of this coordinated planning culminated in the seven-phase approach to the project as previously discussed.

Secondly, the ten schools to be used in the project were selected. The Project Director visited each school for the purpose of explaining the operation of the project to the local vocational agriculture teacher and the school principal and to obtain a memorandum of understanding for conducting the training. In every case the project idea was accepted with enthusiasm. The scope of the in-service training program and the implications were explained. In addition, a commitment from the school administration was obtained to allow the vocational agriculture teacher to be given time off for attending the sessions at the University and working in agricultural businesses and industries. No difficulty was experienced here, and no pay reductions were made from the teachers' regular salary.

Thirdly, agriculturally related businesses and industries to be used as intern training centers were selected by each teacher participant. The teacher participants were asked to select agricultural businesses and industries that would provide opportunities to develop competencies they needed most in planning and implementing training programs designed to prepare secondary and post-secondary school students to work in agriculturally related businesses and industries. The Project Director, along with the teacher participants, visited each agricultural business and industry to be used as an intern training center. The purpose of these visits was to become acquainted with the business and industry personnel and to work out agreements and work periods concerning the teacher participants' internship training. The business and industry management were very cooperative and expressed their interest in the vocational agriculture training programs being expanded to include occupations in agriculturally related businesses and industries.

Fourthly, two consultants were used during the time the teacher participants were in training at the University. A specialist in sales and services was used for two days to develop knowledge and approaches to use in all agricultural occupations involving skills in these areas. The State Supervisor of Cooperative Education in the State Vocational Division of the State Department of Education was used to develop an understanding of how the teacher participants could use the knowledge and skills developed in the project to plan and initiate cooperative education programs in agricultural occupations.

Results

All ten of the original teacher participants completed the training required in the project. All of the teacher participants earned three semester hours of graduate credit and seven of them earned six semester hours of graduate credit for their work in the project. The additional three hours of graduate credit was optional.

Each of the teacher participants was successful in initiating to some degree an agricultural training program for training workers to work in occupations in agriculturally related businesses and industries. The placement of students in the businesses and industries training stations was not as successful as was hoped for at the beginning of the project. This disappointment stemmed from two primary sources, namely:

1. Lack of genuine student interest, and

2. The scheduling of student time to work.

Some of the businesses were somewhat slow in accepting a student for work experience because of previous experiences in using student labor which was not properly oriented for work. However, much of this was overcome as the program proceeded.

As the project proceeded, the project staff and the State supervisory staff visited the teacher participants and found that many of the personnel in the businesses and industries had respect for the abilities of the vocational agriculture teachers and their efforts in and dedication to the program. There were several examples in which the vocational agriculture teachers were asked to demonstrate to the business and industry personnel. This brought about a free exchange of ideas which proved very helpful in later communication with the potential student trainees. In no case was it found that the teacher participants in the project were short on aptitude in developing needed competencies.

In each business and industry where they worked the ten teacher participants engaged in a variety of activities, these usually being that which was on the docket for the day. All teacher participants

were satisfied with the experiences and knowledge they obtained, though they realized that due to the time element they were limited.

A total of seventeen different businesses and industries were used by the teacher participants for intern experiences. These businesses and industries provided an opportunity for the ten teacher participants to engage in ninety-eight different competency-developing activities. These activities were all the kinds of activities engaged in from day-to-day by the regular business and industry personnel. These competency-developing activities ranged from displaying products in farm supply, sales, and service businesses to making feed in a complex poultry feed manufacturing industry.

None of the teachers engaged in menial or service-type jobs such as cleaning rest rooms, sweeping floors, etc. The major reason the teachers gave for not doing these types of jobs was that skill was not of primary concern here.

Those teachers who interned in farm equipment sales and service establishments noted the owner-operator's manuals issued by the manufacturer of the farm equipment was essential for the students to use as a guide manual in working on farm equipment. They found that the service department did not emphasize adequately the importance of keeping the operator's manual accessable at all times.

Those teachers who worked in sales and service establishments reported that product knowledge and good customer relations were essential for most workers in these establishments.

The teachers who worked in ornamental horticulture establishments reported that the greatest value of the experiences was the discovery of the amount of technical knowledge necessary to operate the businesses. They found that a knowledge of plant insects, diseases of plants and how to control them was essential. Also they reported that the ornamental horticulture business provided many jobs for which the slow learner, and in some cases the handicapped, could be trained. Typical of these jobs were rooting, cutting, spraying for plant insects and diseases, fertilizing plants, field cultivating, potting plants, etc. The sales and services competencies needs in the ornamental horticulture businesses were found to be about the same as those found in farm supply, sales, and service businesses; namely, product knowledge and good customer relationship.

Only one teacher obtained experiences in the commercial poultry industry. One of the divisions of this poultry company is poultry feed manufacturing. The teacher's primary competency-developing activities in the poultry feed plant were:

1. Making poultry feed in a complex poultry feed manufacturing plant;

2. Taking orders for and delivering feed to poultry farms;

3. Operating the automatic feed mixer;

4. Taking samples of feed ingredients for testing; and

5. Testing corn for moisture content.

It was found that most of the personnel working in poultry feed manufacturing plants need both vocational and technical competencies. Therefore, it was concluded that a careful screening process is necessary in placing trainees to work in such establishments.

All teachers, vocational agriculture State staff, teacher-educators, and industry personnel indicated that the project paved the way for the development of a more useful training program in vocational agriculture.

I

INTRODUCTION

With the passage of the Vocational Education Act of 1963, restriction on vocational agriculture training being primarily training for farming was removed. The implementation of the provisions of this Act has increased the enrollment in off-farm agricultural occupational training courses. As a result of the rapid expansion of course offerings in vocational agriculture, many teachers of vocational agriculture found themselves needing additional competencies. In an attempt to assist the State of Mississippi in developing these needed competencies in the in-service teachers of vocational agriculture, the United States Office of Education gave the Mississippi State Board for Vocational-Technical Education an EPDA Technical Assistance Project Grant (OE-2525). A subproject of the EPDA Technical Assistance Project was a special Vocational Agriculture Project to be known as, "In-Service Development of Vocational Teachers for Competencies in Non-Farm Agricultural Occupations." This subproject was developed and directed by the Agricultural Teacher Education Department at Mississippi State University.

The controlling purpose of this subproject effort was to assist local in-service teachers of vocational agriculture to obtain needed competencies in agriculturally related businesses and industries. The special objectives of the program have been listed under the summary of the project.

II

THE PROBLEM

The Project Director, in collaboration with members of the advisory committee, followed a simple approach to getting underway a training program that would provide occupational experiences in agriculturally related businesses and industries. These experiences were designed to develop in the in-service teacher of vocational agriculture competencies needed to instruct students in training programs designed to prepare them to enter and progress in occupations in agriculturally related businesses and industries. Our approach was to make certain that the teachers selected wanted to obtain the competencies in question. This having been done, the problem of finding desirable agricultural businesses and industries was tackled. After much consideration by the project staff, it was decided to let each teacher participant evaluate his interests and needs and select the businesses and industries which seemed most relevant. In each case it was to be an internship-type experience.

III

METHODS AND PROCEDURE

Phase I of the project, designated in the prospectus as the Advisory Committee, was actually accomplished prior to July 1. The State Advisory Committee for Professional Development of Vocational and Technical Education personnel in Mississippi was used as the State Advisory Committee for this project. An ad hoc committee composed of vocational teacher-educators in agriculture, State supervisory staff members in vocational agriculture, the State Vocational Guidance Supervisor, and the State Supervisor of Cooperative Education constituted this committee. The committee assumed the responsibility for selecting the teachers to be in the project. The committee met and selected ten teachers of agriculture, seven white and three black teachers from representative areas of the State.

The Project Director visited each teacher at his school and had a conference with the school administrator. This was done prior to the beginning of Phase II.

Phase II. Initial Orientation and Training Period. The ten vocational agriculture teachers were brought to the Mississippi State University campus, July 7 through July 9, for the purpose of giving them an initial orientation and training period for the project. All ten teachers reported for this period of orientation. The project staff spent considerable time orientating the teachers as to the scope of the non-farm businesses and industries in Mississippi, how they were organized in general, and the labor laws which had to be reckoned with in working in certain types of businesses and industries. The teachers were apprised of the necessity for studying their respective communities and for making initial contacts with the agriculturally related industries and businesses in their communities. At the orientation period at the University, several resource persons were used, namely: The Head of the Agricultural Education Department, Alcorn A & M College; the State Supervisor of Cooperative Education; the State and District Supervisors of Vocational Agriculture; Co-Director of the Research Coordinating Unit; and the Assistant Director of the Curriculum Coordinating Unit.

Phase III. Community Study. After the period of orientation and training at the University, the teachers returned to their respective schools to begin a period of collecting and analyzing materials involved in implementing non-farm Agricultural Occupational Programs. Due to the lateness in getting the project underway during the early summer months, it was necessary to complete the community study and the agricultural industry placement during a four-week period, July 13 through August 8.

Phase IV. Agricultural Industry Placement. The Industry Placement period for work experience began July 20 and ran through August 8. During this period each teacher worked in one or more industries, keeping a log of the activities engaged in and the competencies developed. In addition, each teacher kept a record of the number of hours spent in each activity. The teachers were instructed to engage in activities in which they had little or no knowledge or skills. During the work experience in industry, each teacher was visited by the project staff at the establishment where the teacher was getting his experience. In each case the Project Director assisted by other project staff members had interviews with the teacher and the industry or business personnel. No attempt was made by the Project Director to designate specific work stations for the teachers. It was assumed that the teachers knew their needs better than anyone else.

Phase V. Training Period. The second training period at the University ran from Tuesday, August 11, through Friday, August 25. During this training period one out-of-state consultant was used. The project Director and other members of the Mississippi State University staff worked with the ten teachers in evaluating their work experience in industry and the development of specific training programs for non-farm agricultural occupations. Tentative course outlines were developed for the following types of agricultural businesses and industries:

1. Agricultural supply, sales, and services;
2. Agricultural power and machinery mechanics;
3. Ornamental horticulture;
4. Agricultural equipment sales and services;
5. Poultry processing plants;
6. Poultry feed manufacturing;
7. Poultry hatcheries.

On August 13, staff members involved in the project accompanied the ten teachers on an organized guided tour of a large feed and fertilizer manufacturing plant, a very large nursery production and sales organization, and a large agricultural sales and service

establishment. A detailed description of this tour is reported in Appendix A.

Phase VI. Implementation of non-farm agricultural occupations programs in agricultural businesses and industries was the primary emphasis of Phase VI. Each of the participants continued to make personal contacts with businesses and industries for the purpose of getting training situations to provide an environment for training students in different agricultural occupations. The primary purpose of these contacts was to bring about a clearer understanding of what the vocational agriculture departments can do in giving the basic training for effective work experiences in local agricultural businesses and industries.

Phase VII. Phase VII of the project was the debriefing period and was held on the University campus. The debriefing period consisted of a report from each teacher participant on what he considered the weaknesses and strengths of the procedure he used in developing competencies for preparing students to enter non-farm agricultural occupations. Each teacher participant gave a resume of the benefits he had received for having participated in the project. This was an oral report and was open for discussion among other participants.

IV

RESULTS OF THE PROJECT

Surveying Agricultural Businesses and Industries

Of primary interest to the teachers of vocational agriculture was the determination of the diversity of agricultural occupations available in the area. The number of agriculturally related businesses and industries in most instances was too large to make an effective plan for getting work experience in all of them during the time alloted for business or intern experience.

The businesses and industries which existed in most of the school areas were agricultural machinery sales and services, and agricultural supplies, sales, and services. The most specialized types of agricultural industries were commercial poultry production complexes. The present labor force working in these businesses and industries was trained mostly on the job by a work experience program carried on by the business or industry concerned. The range of ages of the workers in all businesses and industries surveyed was from early twenties to past sixty-five. All businesses and industries were found to be in need of trained labor for service-type jobs.

Geographical Distribution

The geographical distribution of the ten teachers selected to participate in the project resulted in having a cross section of the types of agricultural businesses and industries existing in the State and employing the greatest number of people. Because the program development was to be primarily for the disadvantaged in the school, no effort was made to select the highly technical or specialized types of businesses and industries. The locations of the project teacher participants ranged from the Mississippi Delta farming area to the Coastal Plains in South Mississippi. Included also in the distribution of participants were the vocational agricultural departments in the perimeter of the largest metropolitan area in the State; namely, Jackson, the State capital.

Institutional Training Periods

There were three periods of institutional training during the project: The first period was the orientation period which

brought the ten teacher participants to Mississippi State University for intensive planning in developing procedures to be followed in getting the program under way and arriving at a common understanding of the procedures involved in the project.

The second period was an intensive period of program planning which followed the industry work-experience period. In the development of training programs, the teachers developed outlines for different training programs needed in the businesses and industries included in the project. These were very comprehensive outlines designed to reach specific training objectives. The detailed training programs outlined are shown in Appendix C.

The third instructional training period was designated as the debriefing period in which the teacher participants gave the advantages and disadvantages of the project as it was run in their communities. The consensus of the teacher participants was that the bringing about of a better understanding between the school and the agricultural businesses and industries was the most profitable result of the program. The teacher participants reported unanimously that the businesses and industries personnel were very willing to cooperate in providing training. The teacher participants were unanimous in their agreement that the primary disadvantage in this project was that the time allotment of three weeks was too short for developing the competencies needed.

The primary limitations of the project were viewed as follows:

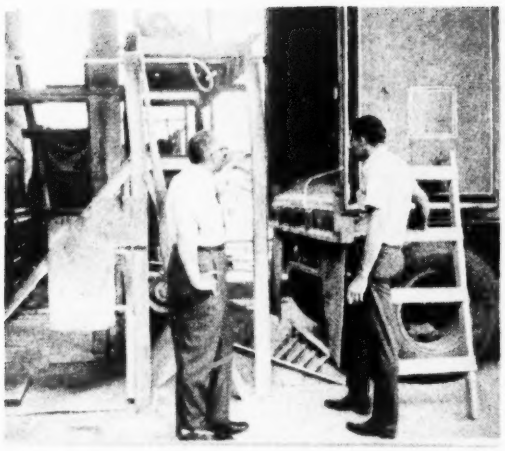
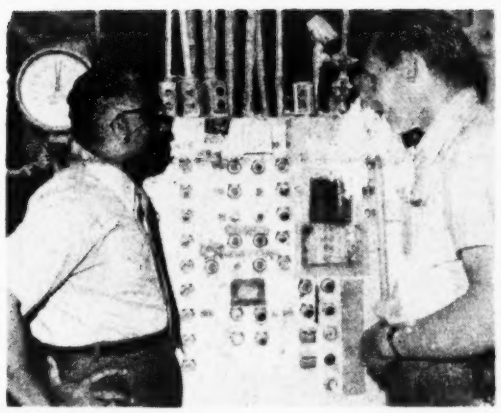
1. The in-service experiences of the teachers in non-farm agricultural occupations were limited to the kinds of agricultural occupations found in the agriculturally related businesses and industries in the area. The kinds of businesses utilized by the teachers were poultry feed manufacturing industries, poultry processing plants, broiler breeders, broiler production, poultry hatcheries, agricultural machinery sales and services, agricultural supply, sales, and services, nursery production and sales, and meat processing. Not all the teachers had an opportunity to work in each type of business or industry listed above. The scope of the activities engaged in was limited because of the late date during the summer for getting the industries-experience programs underway.

2. Because this was a new undertaking, the identification of agriculturally related businesses was limited to those types of businesses and industries which showed a direct relationship to agriculture, or businesses and industries which depended directly on agriculture for their existence.

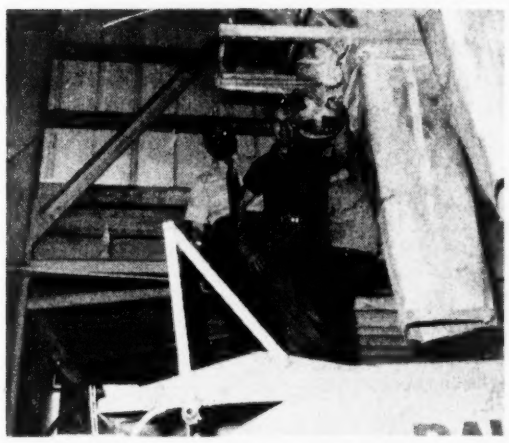
3. The project was limited to high school teachers of vocational agriculture with the exception of one post-high school program in ornamental horticulture at a junior college.

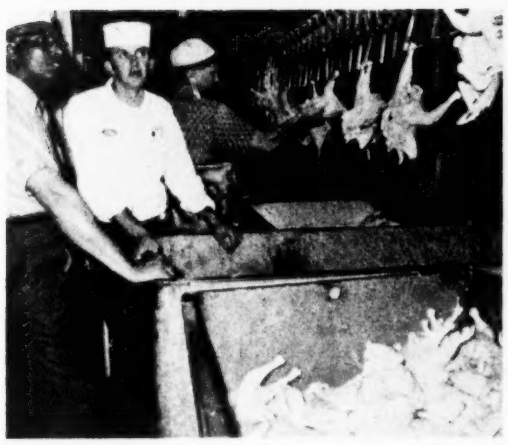
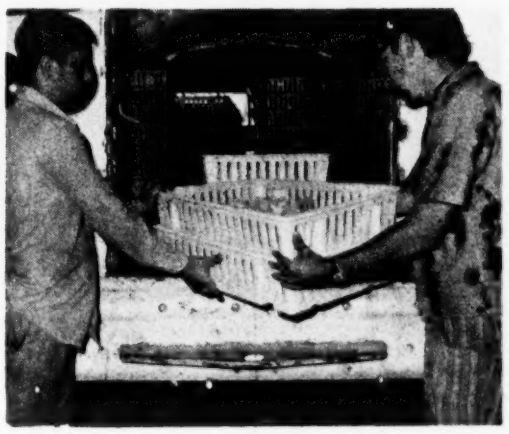
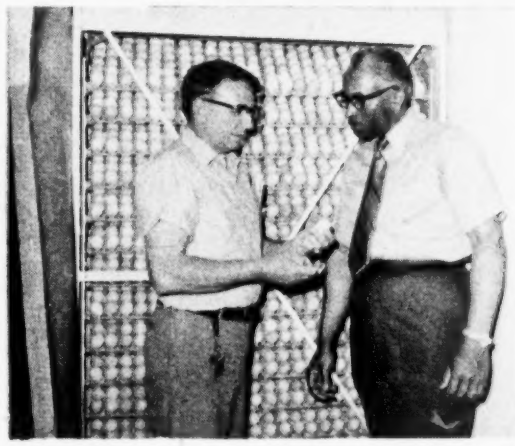
Summary of Teacher Participants' Internship Experiences In Agriculturally Related Businesses and Industries

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Poultry Feed Manufacturing (One teacher)	Making feed	Learned the different kinds of feed made in the mill
		Learned the composition of the different kinds of feed
		Learned the location of the ingredients for the different feeds in storage department
		How to select and transport the ingredients from the storage department to the mixing area
		How to weigh the ingredients for a premix
		How to dump the ingredients into the mixing bins and mixed to the proper consistency
	Operating the automatic feed mixer	How to start and operate the mixer
		How to read the instrument panel
		How to push the proper button on the ingredient desired
		How to set the automatic scales
		How to release the scales
		How to dump the mixture
	Taking samples of feed ingredients for testing	How to secure proper containers
		How to fill containers with ingredients
		How to label containers

Competency Developing Activities in Poultry Feed Manufacturing, Poultry Processing, Poultry Hatchery, and Poultry Production



INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Poultry Feed Manufacturing (Continued)	Testing corn for moisture content	How to collect a sample of corn How to get the testing machine results How to put the corn in the machine harper How to read the moisture content scale
	Delivering feed to poultry farm	How to collect orders for feed How to make out delivery sheets How to load the delivery trucks How to record delivery of feed on record book How to unload the feed into bins at the farm

INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Poultry Processing Plant (One teacher)	Killing chickens at the plant	How to unload chickens from trucks by crates
		How to place crates on a roller bed
		How to remove chickens from crates and handle on line
		How to bleed chickens
	Removing feathers from chickens	Observed the scalding process for removing feathers
		Observed the automatic picking process
		Observed how wing feathers left by pickers are removed
		Observed the singeing process as chickens moved through a gas flame
		Observed the defooting process
	Rehanging chickens on conveyer after defooting	How to pick up chickens from trough
		Attaching chicken to conveyer by the thigh
	Removing the oil bag	How to select knife
		How to hold the knife
		How to brace the oil bag
		How to make the cut

INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Poultry Processing Plant (Continued)	Removing the intestines	How to make the cut
		How to pull the "guts"
		How to remove the liver
		How to remove the gizzard
		How to clean the gizzard
		How to operate the gizzard machines
	Removing the head and neck	How the heads are removed by a mechanical device
		How to cut the necks
		How to pull the crop
		How to pull the necks
	Wrapping gizzards, livers, and necks	How to place paper
		How to package, putting one gizzard, one neck, and a liver on the paper
		How to wrap the package
		How to insert the package into the body cavity of each chicken
	Activities engaged in by observation	How chickens are iced
		How chickens are crated
		How chickens are weighed
		How chickens are transferred to the freezing room
		How chickens are cut up
		How chicken parts are packed and weighed

INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Poultry Processing Plant (Continued)	Activities engaged in by observation (continued)	How chickens are graded How chickens are inspected by government inspectors How ice is made in the plant How the waste products are disposed of

INTERNSHIP EXPERIENCES (CONTINUED)

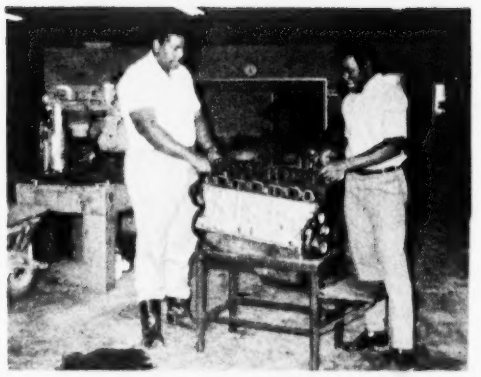
Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Poultry Hatchery (One teacher)	Delivering baby chicks to broiler farms	How to count and load chicks on bus at the hatchery How to unload chicks at the farm How to disburse chicks in the house How to reload empty trays on the bus at the farm How to unload, clean, and disinfect empty trays at the hatchery
	Traying eggs	How to transfer eggs from the egg room to traying machines How to place eggs in incubator trays How to cull cracked or faulty eggs How to place eggs on carts fro transferring to incubator
	Pulling eggs from incubator	How to select eggs to be pulled from incubator How to place egg trays on a cart How to place eggs in hatchers How to check and regulate temperature
	Pulling chicks from natchers	How to pull chick trays from hatchers How to transfer chicks from hatcher trays to hauling trays How to count chicks, 100 chicks to each tray How to cull out weak or faulty chicks How to keep record of the number of chicks taken from each hatcher

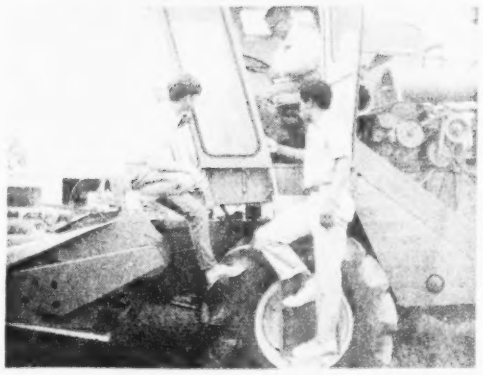
INTERNSHIP EXPERIENCES (CONTINUED)

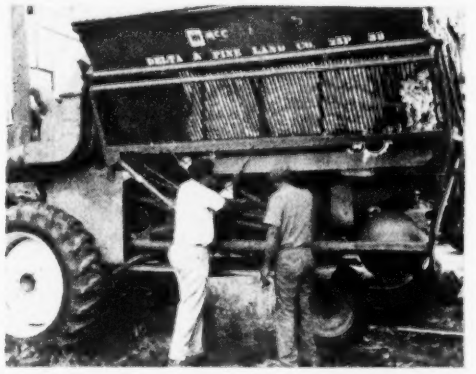
Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Poultry Breeders (One teacher)	Transferring pullets from the growing farms to the laying farms	How to drive the chickens to one end of the house How to set up net screens to confine chickens How to catch pullets six at the time How to place pullets into hauling coops How to select and load one rooster for every 10 pullets How to unload chickens at the laying farms
	Servicing the laying farms	How to check and repair automatic feeders How to check for sanitation of house equipment How to check and repair water pump How to check feed supply and order feed
Poultry Production (Broilers)	Servicing broiler farms	How to inspect broiler houses How to check and adjust equipment How to check for symptons of diseases How to take samples of chickens to Lab. for testing for various diseases How to dispose of dead chicks How to order feed where and when needed How to keep houses dry and well ventilated How to check and keep water supply adequate

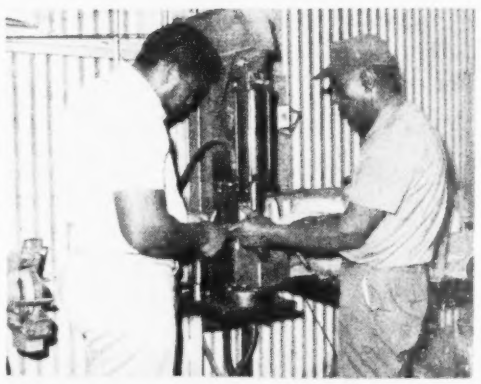
INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Agricultural Machinery Sales and Service (Four Teachers)	Repairing hydraulic pump on tractor	Worn out hydraulic pump had to be replaced on IH tractor The pump is mounted on the top of the tractor; to remove pump, loosen the bolts, lift pump off; insert the new or repaired pump, tighten the bolts which hold the pump in place; a hydraulic pump was repaired by replacing broken gears; most of the time the owner will buy a new pump and trade the old one in, rather than repairing it
	Alignment of a spindle bar on a cotton picker	After the spindle was taken out of the bar, it had to be aligned in order to determine whether it was straight; if the bar does not line up, it is not straight; if the spindle bar is out of line, it has to be anchored down and a cylinder used to straighten it, after which the spindle can be replaced There are two kinds of spindles; a right hand spindle and a left hand spindle; the right hand one goes through the right bar and the left one goes through the left bar
	Taking out spindle bars on cotton pickers	Procedure to follow: Take out the two bolts that cover the bar track and the two at the bottom; turn spindle to the opening of the bar track, lift up, and pull out; rotate the next bar, using the same procedure until all bars are removed The track is the base that the bar goes around on; it also holds the bars in place
	Preventing tire slipping on the rim	Tires on a four wheel drive tractor was slipping on the rim and pulling the valve stems loose; this problem was corrected by adding water to the tires





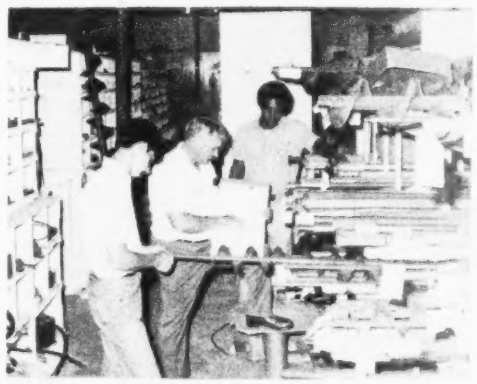


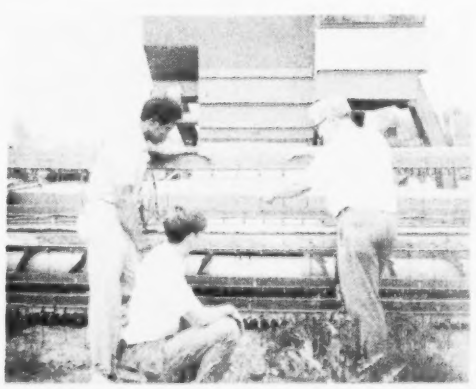


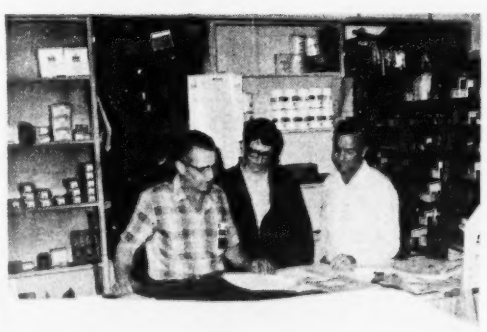
Competency Developing Activities

in Agricultural Machinery Sales

and Services







INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Agricultural Machinery Sales & Service	Converting bean combine to rice combine	Correct procedure to follow: Replace two gears in the transmission that causes the combine to run slower Adjust spiked tooth cylinder for rice Run combine for one hour at slow speeds a. Observing noises that are unusual b. Lubricate all chains and bearings Run combine for 20 minutes at operating speeds Tune motor to specifications Steam combine and put on display
	Becoming acquainted with card index in parts department	The purpose of a card index is to be able to tell the parts on hand and how many have been sold and when sold
	Numbering stock parts	Getting number off cards and bend, and placing on each part so that part can be accurately identified
	Taking inventory	How to check all itmes in stock and listing cost Also list new items needed to service the public
	Replacing grease seal in mower	Procedure to follow: Remove power shaft Pull old seal out Press new seal in place

INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Agricultural Machinery Sales & Service (Continued)	Assembling pasture clipper	How to follow assembly diagram How to identify and use proper tools How to adjust clipper for use How to service machinery before using in field
	Repairing gear box on hay rake	How to replace clutch in the gear box and replace racer's bearing and bushing to make the rake mechanism turn freely
	Putting brushes in generator	How to remove old brushes and install new ones. Note: Always check terminals to see if secure, check for worn bushings, armature dragging, etc. Check for short circuit
	Trouble-shooting tractor that would not start	Correct procedure in checking plugs, points, etc. Note: Reason for this tractor's failure to start was short in starter and it was drawing excessive currant from ignition, causing it not to have enough currant to fire
	Replace rear main oil seal on tractor	Procedure to use in breaking tractor in half. First remove hood, wires, etc. so you can begin. Always be careful when taking the hydraulic pump loose. Note: Plug was not vented which caused the trouble
	Repairing P.T.O. on cub tractor Note: Would jump out of gear	Cause of the trouble: Shifter fork was badly worn - To replace pull housing - Follow mechanic's guide book for particular make of tractor

INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Agricultural Machinery Sales and Service (Continued)	Providing service for customers	When a customer needs help, you must give it Proper service at all times will keep a good customer A business must have customers to stay in business
	Displaying equipment & tractors	Attractively displaying equipment and tractors out front by the highway can and will sell more material than when the prospective customers cannot see merchandise
	Selling equipment & tractors	Find out what the customer is looking for, or what his needs are Should try to convince the customer that the products the firm has on hand and the service provided is what he needs and is the best available in the area
	Working in parts department	The firm, or business must be able to have the parts to fix or repair the merchandise sold, or be able to get them quickly for the customer when needed This requires a well organized indexing system
	Writing invoices	That all items sold must be listed on invoice for sales tax purposes
	Operating a valve and facing machine and grinding values	In order to take out the valve, one must first loosen the springs, after which the valve slips right out We ground valves of all kinds and sizes; we put them in a machine and adjusted them to the amount to be taken off

INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Agricultural Machinery Sales & Service (Continued)	Operating a valve and facing machine and grinding values (continued)	Another machine is used to face the head so that the valve can seat itself
	Checking bushings	The bushings were checked by a machine to determine whether or not they were fit for future use; if the gauge on the machine registered zero, they were good; however, if it registered above or below zero, they weren't to be used again
	Checking a cotton picker head	Spindles have to be removed; a total of 620 spindles were removed with an air wrench; there were three sets to be taken out: the inside, the middle, and the outside After the spindles had been removed, they were placed in a press to separate spindles from bushings
	Trouble shooting a tractor	This involved determining the reasons that the tractor wouldn't run The first examination showed that the points and plugs needed changing because they were worn out; the starter needed new brushes; as a result new brushes were put on the starter The armature was then ground after having been checked for shortages Finally, a timing light was used to determine whether the tractor was in proper time

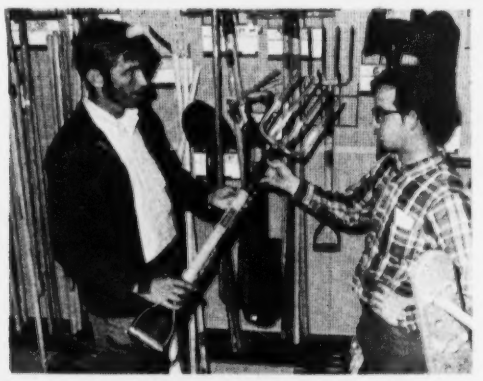
INTERNSHIP EXPERIENCES (CONTINUED)

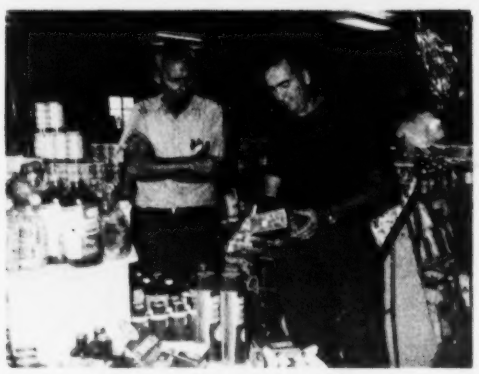
Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Agricultural Supply, Sales, and Service (Two teachers)	Placing price tag on each product	Price mark-up on each product is pre-determined: all small items, 33% mark-up, other items, 50%; cost plus selling cost is placed on each item. Cost price is coded by using letters of alphabet; a machine is used to place this information on a t that is placed on each product
	Selling insecticide	Product knowledge-- Sevin Dust - use for garden dust to control insect in garden; used as a dust or may be a wettable power; 10% Sevin is not wettable; 50% Sevin is wettable Many other insecticides are available and the seller must have some knowledge of what they are used for and the precautions to take when applying them
	Replacing stock	When adding stock, bring all old stock to front and put new stock in back. Better be overstocked than to have customer to ask for something and to be out of it; can check last years' tickets to determine amount of stock needed in future
	Displaying of products	Must maintain a neat display; use signs or pictures to show the result of using this product; place price on each individual package or product; the manufactor usually furnishes attractive advertising suggestions
	Meeting customers	Meet customers with a friendly greeting; all customers cannot be treated alike: give customer the feeling that you are able and willing to help him with any problem; never show signs of arrogance

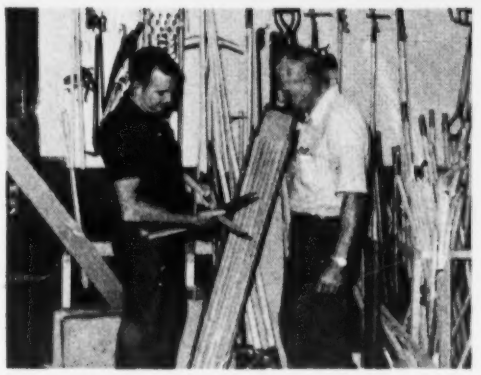
Competency Developing Activities

in Agricultural Supply, Sales,

and Service







INTERNSHIP EXPERIENCES (CONTINUED)

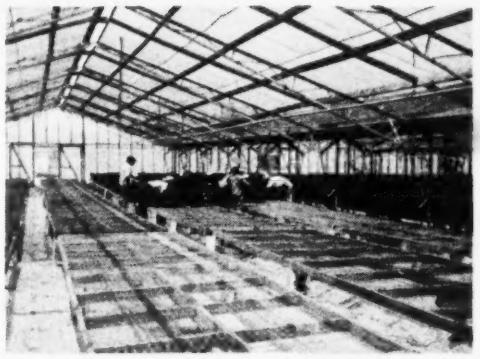
Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Agricultural Supply, Sales, and Service (Continued)	Dealing with dissatisfied customers	The seller must assume that the customer is "always right"; listen to customer's problem with open mind and try to satisfy him if at all possible; determine what caused the dissatisfaction and take actions to prevent event from happening again
	Selling of hard-to-sell products or old products	Place these products close to the front door so that the customer will see them when he comes in; use sale gimmicks such as, two for one sale or buy one and get second one for one cent more -- it works
	Returning of merchandise to store	Must have sales slip to return any merchandise. If customer has sales slip then a return slip must be written up with the customer signing this slip. This is required by the Auditors; if customer does not have a sales slip, he may exchange the merchandise for some other with equal value
	Charging sales tax	Sales tax is charged to everybody unless product is for farm use, then as much as fifteen dollars must be bought before items are tax exempted Sales tax is not charged to customers who are tax exempt by legal status, such as schools, or if the product is to be resold
	Helping the customer	Customer in most cases is totally dependable upon the salesman; customer will take most any recommendation; customer feels that the salesman knows what he is talking about -- this points up the importance of the salesman having adequate product knowledge
	Receiving new merchandise	Check shipping invoice; make sure that number of cartons shipped correspond with number of cartons received; all shipping invoices must be signed by the receiver when the goods are received

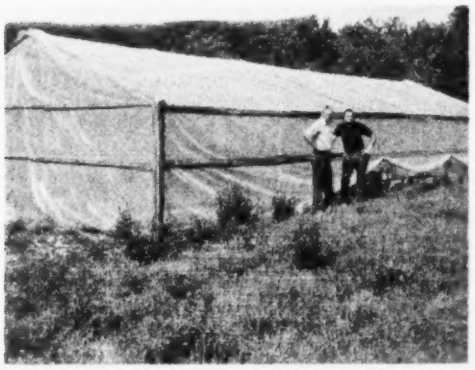
INTERNSHIP EXPERIENCES (CONTINUED)

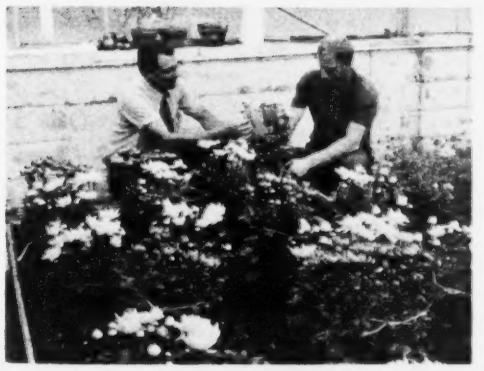
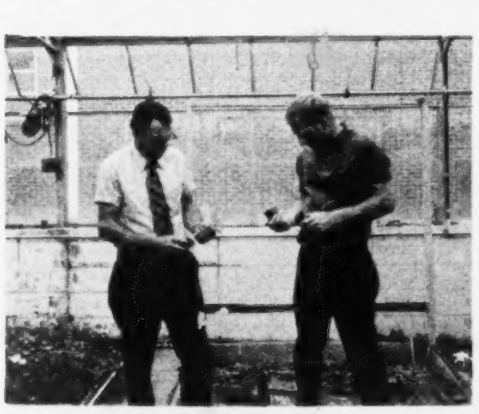
Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Agricultural Supply, Sales, and Service (Continued)	Selling in general	Need to determine the customer's need, and how he is to use the merchandise; be sure that customer knows the precautions to take in using the product sold him
	Displaying products	Always move old merchandise to front and new to back. Must have a neat display; merchandising is important to move and sell produce
	Ordering merchandise	Merchandise must be ordered so that the stock will be enough to take care of the demand; to do this one can go back to the last years' order sheets and see how much was ordered at any given time; if certain items are to be increased, make a note on amount to increase
	Selling agricultural chemicals	Must know what each chemical will and can do, ask what and where it is to be used; give precautions on how to use; instruct customers to follow instructions on the container, and practice safety precautions
	Selling in general	Must find out what the person buying needs and what it is to be used for; should suggest something that will benefit the buyer in getting the job done; try to please the customer so that he will trade with you again; the customer must be satisfied
	Dealing with unsatisfied customer	Customer is always right; must listen with open mind to his complaints; make adjustments if possible
	Making out sales tickets	Must find out if cash is to be paid for item or if item is to be charged, must list the product bought, unit price, and quantity bought. Must charge retail sales tax on all products except feed; buyer must buy $15.00 or more, and be a farmer not to be charged a retail sales tax
	Operating cash register	Must know category of each item so that you can ring it up on cash register correctly

INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Nursery Production and Sales (Four teachers)	Soil mixing for potting	Procedure: Mix sawdust with soil for texture Apply 0-20-20 for fertilizer Incorporate dieldrin for control of insects Mix with rotary spader
	Preparing potted plants for winter growth	Procedure: Place plants in rows in close order Cover root area with pine sawdust to protect roots from freezing
	Digging field plants and placing in tapered container	That labor saving over balling plants with burlap is considerable That a hard point shovel is used That unnecessary dirt is removed from plant (prevent disturbing roots) That a small amount of soil mixture (sawdust & 0-20-20) should be placed in container; place plant and fill with the sawdust mixture That placing covered plants in shaded area is essential That watering covered plants is essential That plants should be dug at driest possible time so that soil will work well
	Weed and grass control in field	That on close spaced plants this is done mostly through use of chemicals That weeds and grass are often pulled by hand

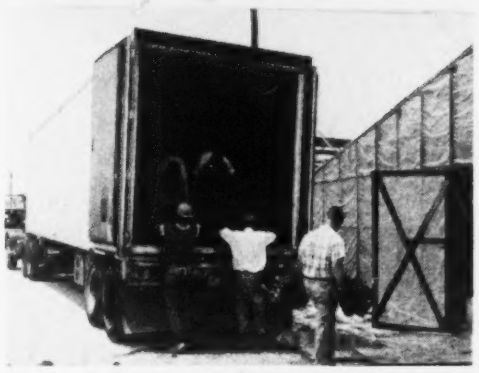


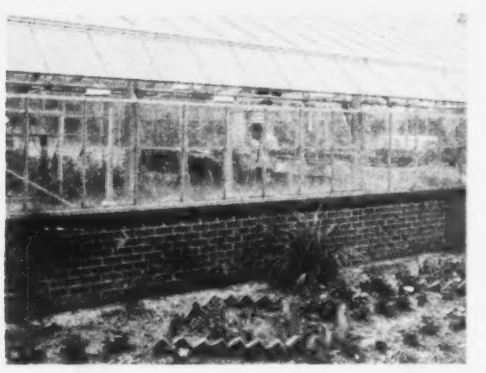


Competency developing activities

in nursery production and sales





INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Nursery Production and Sales (Continued)	Weed and grass control in field (Continued)	How to use hand tools That on widely spaced plants - weed and grass is controlled by discing and plowing; chemicals may also be used
	Wind breaks for potted plants in open for protection from cold weather	How Done: Planting of reed cane on north side of plant area Erection of board frames Establish potted area on south slope
	Purchasing of equipment and material for nursery	Purchase in as large lots as possible for better prices and better selections Purchase in areas where this type of business is being done, rather than in areas where only the hobby farmers and housewife prevails Purchase where salesman has knowledge of product
	Preparing soil for fall planting in fields	Procedure: Mulch is added by planting fast growing grasses in spring or early summer In late summer, mulch will be disked into soil; the area is later flat broken, turning mulch under at depth of 8" to 10"
	Placing cuttings in root bed	Procedure: Dip end of cuttings in harmone solution just before planting Place stem 1/3 length of cutting into rooting mixture

INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Nursery Production & Sales (Continued	Placing cuttings in root bed (Continued)	Spacing depends on variety of plant--2" to 4" apart in neat rows
	Making cuttings	Procedure: Cut only new growth Sterilize shears in disinfectant before cutting (any good disinfectant that isn't harmful to plant) Make cutting 3" to 4" long Cut at 45° angle Remove bottom leaves Place cutting in harmone solution to prevent drying out
	Constructing cutting beds	Procedure: 1" X 6" planks for walls Mixture of course sand (preferably concrete sand) and perlite Ditch in middle below media; fill trench with stone for drainage After mixture is placed and leveled, roller is used for compaction Water bed with fine mist before planting
	Watering of root stock in beds	On hot days water every hour on the hour On cloudy days, water 3 to 4 times daily

INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Nursery Production & Sales (Continued)	Chemical weed control in field	This is done by spraying and broadcasting in grandular form; use approved chemicals and recommended rate
	Insect control in can containers	Done with hand or power sprayer; by all means, follow directions on label carefully
		How to identify insects
		What to use in control - Note: Follow manufacturer's instructions on label
		Kinds of spray pumps in use
	Care of tools	Wash with water if necessary
		Drying procedure
		How to oil and store
	Potting plants	Procedure:
		Use mixture of soil, sawdust and 0-20-20
		Use sheltered area for potting (protect from sunlight and rain)
		Place small amount of mixture in pot; place plant and add more mixture and press firmly on soil to set plant
		Place in shaded area for 4 to 8 months, possibly more, depending on plant variety

INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Nursery and Garden Center	Making and placing hard-wood and soft-wood cuttings in propagation	Procedure: Sterilize shears before taking cuttings; cut most varieties 4" - 6" long and cut at an angle; leaves stripped 1/3 the way up the stem and placed into the ground Spacings are determined by such things as size of plants, air circulation, available light, etc. Watering of root stock on sunny and cloudy days
	Installing automatic mist system Note: Hooked up the plumbing and electrical parts and set the timers for the mist system. The mist system consisted of 2-time clocks, a solenoid valve electrical wire, and plumbing essentials	How to install electrical wiring How to cut and thread pipe and set in place How a solenoid valve operates How to set up, operate, and space mist nozzles The purpose of an automatic mist system and the role it plays in the nursery business How to set up and operate automatic electrical time clocks

INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Nursery and Garden Center (Continued)	Purchasing of materials and equipment	Purchase in large lots Purchase in areas heavily engaged in the nursery industry rather than where the hobby farmer and housewife buy Knowledge of product should be known by the sales personnel where items are bought Purchase in areas where a better selection of products can be found (i.e., chemicals for insect control)
	Planting rooted pot plant stock to sell to the general public at a garden center, and how to arrive at prices and cost factors	Digging rooted stock from propagation area Names of popular varieties used in the retail trade Size pots to use for specific plants and types of pots Planting of stock in the pots, watering practices, and setting on the retail shelf Pricing of plants by size, variety, and size of pots Costs involved in getting a plant ready for sale
	Plant breeding of greenhouse and nursery stock	Varieties bred (i.e., figs, blueberries, etc.) Viability of seed and stock Crossing of plants for hybrid vigor Storage of seed used in plant breeding Characteristics to look for in plant breeding

INTERNSHIP EXPERIENCES (CONTINUED)

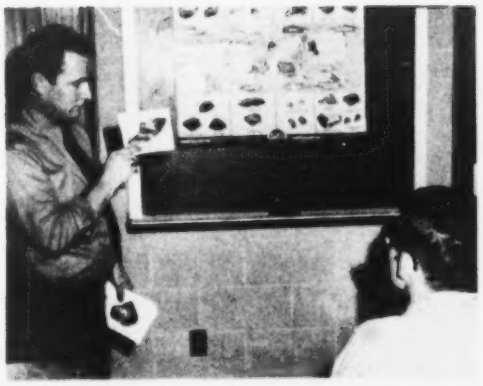
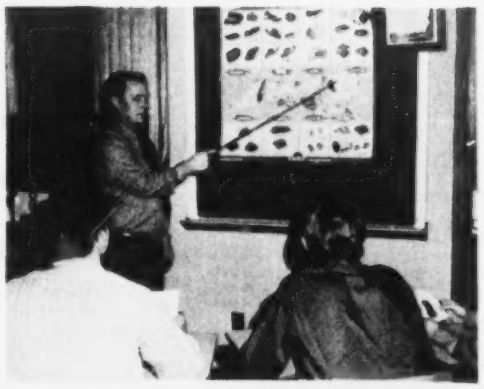
Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Nursery and Garden Center (Continued)	Pots and other containers used in the nursery and floral industries	How to select the proper pot for a specific job
		Factors involved in watering and fertilizing container stock
		Shipping pots (kinds)
		Metal vs. plastic vs. paper pots; advantages and disadvantages of each
		Filling pots with soil mix and fertilizer
	Landscaping a gasoline station, a restaurant, and a home	Type of shrubbery popular for commercial property
		Mulching of plants
		Proper kind of weed killers used in landscape planting
		Transplanting of trees and shrubs from containers to permanent locations, bare root, balled and burlapped
	Construction of a "bath house" for container stock	How to lay out corners of the building
		How to obtain elevations desired
		Type lumber used and chemical treatments required for durability
		Type of shading devices to use
		How to brace and tie in features of a bath house
		Height of bath houses and proper width

INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Nursery and Garden Center (Continued)	Mixing and using soluble fertilizers on nursery stock	Type of fertilizers that can be used in liquid form Rates of application Ratios of mixing and percentages When and how much to apply on specific plants Record-keeping devices Plant growth compared between fertilizer and control Use of a mixture-proportioner in applying liquid fertilizer Care of machinery
	Labeling of plants	How to prepare label for common and scientific names How to place price on each plant

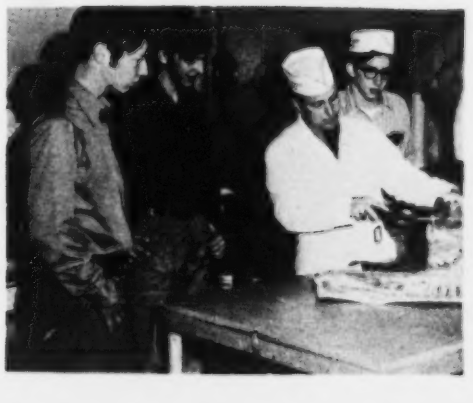
INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Meat Processing Plant (One teacher)	Quartering beef carcass	Procedure: Quarter between 12th and 13th ribs saw across backbone
	Cutting forequarter of beef	Procedure: Stick knife between 5th and 6th rib to mark Lower forequarter to block with the outside up Cut rib & novel plate from chuck & brisket following the 5th rib Separate rib from novel plate Remove shank from chuck Remove brisket with shank
	Cutting hindquarter	Procedure: Place hindquarter on the block inside up Remove kidney and trim the fat from inside the loin Remove flank Cut loin from round Remove rump from round Separate the loin into two parts

Competency Developing Activities

in Meat Processing



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INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Meat Processing Plant (Continued)	Determining percentage of carcass cut in each wholesale cut	Hindquarter 48-49% a. Round 24% b. Flank 4% c. Loin 17% d. Kidney knob 2-6% Forequarter a. Rib 7% b. Plate 7% c. Chuck 25% d. Brisket 5-6% e. Shank 4%
	Learning cutting room equipment	Butcher saw Curved blade knife Boning knife Band saw Patty machine Choppers Bacon slicer Steak tenderizer Vacuum packager Cutting board Meat blocks Multi-oilstone set Scales Meat pans and other containers Tables Sinks
	Learning cutting room supplies	Soaps Vacuum package material Brushes Sausage seasons Caps Clothing Saw blades Paper towels

INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Meat Processing Plant (Continued)	Identification of retail meat cuts for beef	Standing rib Rolled rib Rib steak Club steak Porterhouse steak Pinbone steak Sirloin steak Tenderloin steak Arm Pot-roast Blade Pot-roast Standing rump Heel of round Arm steak Blade steak Flank steak Round steak Top round steak Eye round steak Bottom round steak Fore Shank Brisket Short Plate Short Ribs Tip roast Rolled rump Sirloin butt steak Top loin steak Rib eye steak Cross ribs Inside chuck pot-roast Chuck roast Rolled plate Boneless fresh brisket Boneless corned brisket
	Learning cardinal points in cutting meats	Always make major cuts at right angles to muscle grain Separate the thick from the thin Separate the fat from the lean

INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Meat Processing Plant (continued)	Making cuts of pork	Place on block inside up
		Remove hind foot
		Remove fore foot
		Cut shoulder between 2nd & 3rd ribs
		Remove ham
		Separate loin from belly
	Trimming shoulder of pork	Procedure:
		Place on block inside up
		Lift neck bone
		Cut off jowl parallel to shoulder cut
		Flatten and trim jowl
		Separate shoulder into picnic and shoulder
		Cut Boston butt
		Trim picnic
		Trim whole shoulder
	Trimming ham	Procedure:
		Remove tail bone and flank corner
		Skinned ham or collar ham
	Trimming loin	Procedure:
		Remove backfat from loin

INTERNSHIP EXPERIENCES (CONTINUED)

Type of Business or Industry	Competency Developing Activity	Knowledge and Skills Acquired
Meat Processing Plant (continued)	Trimming belly	Procedure:
		Remove spareribs from belly
		Flatten belly
		Cut through test line
		Cut off flank
		Square sides
	Vacuum packaging of retail cuts	Procedure:
		Select correct size of paper and cut
		Start machine
		Set heat range
		Heat and burn paper; wrap
	Learning sanitation rules	No smoking or chewing allowed
		Head gear is worn
		Knife and knife containers to be sterilized
		Personal health is essential
		Federal and state laws must be learned and observed

V

EVALUATION OF THE PROJECT

Evaluation By the Project Staff

The evaluation standards used by the project staff evolve around the overall project objectives. The consensus of the project staff is that all objectives of the project were achieved, but in varying degrees. At the end of the project, June 30, 1971, the ten teacher participants had demonstrated that they, through internship training in agricultural businesses and industries, had increased their competencies in evaluating the opportunities for placing students in off-farm agricultural occupations. However, it was the consensus of the project staff that the number of students placed in work experience situations by the teachers was disappointingly low. This was especially true with the disadvantaged students. Upon analysis of the local situations it was concluded that the time allotment of one year is too short a period of time for developing teacher competencies and implementing an extensive training program for work experiences in agricultural businesses and industries. Perhaps an initial program of two years should be planned. The first year should be used for (1) developing extensive teacher competencies needed and (2) informing agricultural businesses, industries, and school personnel about the program. The second year then could be devoted to developing meaningful work experience programs in the various agricultural businesses and industries in the school areas.

The internship experiences of the ten teacher participants were assessed as extensive; however, it is the consensus of the project staff that the three weeks allotted for internship experiences in agricultural businesses and industries is too short a period of time to allow the vocational agriculture teacher to gain knowledge and skills in every type of agricultural business and industry in the area where students might be employed.

The evaluation analysis showed that the vocational agriculture teachers can establish wholesome relationships with and obtain cooperation from agricultural businesses and industries in the areas served by the schools. All teacher participants in the project recognized that most of the basic agriculture they were teaching their vocational agriculture students in production agriculture is also useful as basic knowledge in working in agricultural businesses and industries.

Evaluation by the Teacher Participants

(This evaluation is a composite of the evaluations reported by the ten teacher participants in the project.)

The project has developed many professional and business competencies needed by the teacher of vocational agriculture. These competencies enable the teacher of vocational agriculture to extend his instructional program to subject matter areas not previously included. The expanded program can capture the interest of many students who would otherwise bypass agriculture as a career. A successful work-experience program that can now be provided for many vocational agriculture students will serve as a motivating force.

The agricultural businesses and industries can provide job experiences which cannot be given in the classroom or shop at school. The expertise of business and industry personnel proved to be superior to that of the local vocational agriculture teacher in the kind of work essential for the successful operation of agricultural businesses and industries in the area.

Each type of agriculturally related business and industry is different in some respect. Each one wants students trained to do jobs related to his particular business or industry. It is this type of situation that makes it necessary that work experience programs be initiated in off-farm agriculture businesses and industries for more students who are interested and show the necessary aptitude.

One of the major advantages of the project is that it provided an opportunity for the local vocational agriculture teacher to meet and work with business and industry personnel they had not known before. Moreover, it provided an opportunity for the business and industry personnel to become acquainted with the program of instruction in vocational agriculture.

It was the consensus of the ten teacher participants that the project had certain weaknesses. Several of the weaknesses were:

1. The project would have been more effective had it been started earlier and the training programs put in the vocational agriculture curriculum and explained before the students selected their courses for the school year.

2. There was insufficient time to acquaint parents and the general public with the details of the program. As a result, some of the students got little or no encouragement from parents to get into the program.

3. The public relations concerning the program was inadequate. Consequently, the program was confused with other federal programs.

4. It was difficult to motivate some of the disadvantaged students. This was especially true for working in service type jobs.

Third Party Evaluation

The third party evaluation was conducted by the Mississippi Research Coordinating Unit for Vocational-Technical Education. Dr. James F. Shill (Co-Director RCU) directed the evaluation team activities.

With the implementation of the project, it was felt that evaluation activities could make the greatest impact on the implementation of the project by focusing upon the process as well as the final results. Deficiencies in the process detected at early stages could best be corrected with the least amount of confusion if evaluative data concerning the process were continually fed back and incorporated into redirecting the project efforts. Therefore, evaluation activities were centered around the process as well as the project results.

Included in the evaluation were data collected from analysis of records and reports; analysis of project operation; judgments of qualified observers; analysis of interviews with trainees, State Division of Vocational Education personnel, consultants, school systems faculties and administrations; and analysis of instructional materials, techniques, and methods. In addition, special emphasis was given to student placement success.

The third party evaluation in this report centers around the use of the project's educational goal and objectives as standards by which the outcomes were assessed. The evaluative time utilized the goal and objectives to develop specific evaluative objectives for the purposes of analysis.

PROJECT GOAL -- TO PRODUCE VOCATIONAL AGRICULTURE TEACHERS WITH SUFFICIENT COMPETENCIES TO PLAN, INSTRUCT, COORDINATE, AND EVALUATE PROGRAMS FOR UNTRAINED AND DISADVANTAGED PERSONS IN NONFARM AGRICULTURAL INDUSTRIES

1. Evaluation Objective: To provide a structure for efficient operation of the project. The basic structure designed to implement the project provided for functional operation during its duration. An effective working relationship was observed in operation among the personnel of Mississippi State University's, Alcorn A and M College's Agricultural Education Departments, the local school systems included in the project, nonfarm agricultural businesses and industries, and the

State Division of Vocational Education. A free exchange of ideas and assistance was observable over the entire conduct of the project. Evaluative personnel attribute much of the success of the project's efficient operation to the thorough planning which included all concerned personnel.

Record and report analysis conducted by the evaluative team disclosed a comprehensive system of record keeping. Written reports prepared by trainees tended to be thorough. Project personnel also kept detailed records which were available to the evaluation team.

The project personnel devoted sufficient time to the field supervision of trainees. Supervisory activities pointed out special areas of concern in the project around which special trainee development programs were conducted.

2. Evaluation Objective: To increase trainees' competencies in determining the local outlook and skills necessary for placing students in nonfarm agricultural occupations employment. Each trainee included in the project received instruction in the methods and techniques to be utilized in attaining the objective. Information obtained indicated that each trainee conducted surveys on agribusinesses in their respective school districts and developed lists of competencies needed by students entering those occupations. Results indicated that competencies in this area had been developed and that the objective had been successfully completed.

3. Evaluation Objective: To develop understandings and competencies of trainees in the organization and operation of nonfarm agricultural industries. During the internship phase of the project trainees increased their understandings and developed new competenices associated with agribusinesses as demonstrated in course revisions, development, and implementation. However, the time spent in the internship phase was not of sufficient length to allow trainees skill development in all tasks (associated with the particular agribusiness) to develop to the highest level of performance. It was of sufficient length, however, to develop thorough understandings of the operation. This project objective was successfully attained in the opinion of th evaluation team.

4. Evaluation Objective: To develop trainees' abilities to plan for and utilize nonfarm agricultural businesses and industries personnel in the agribusiness instructional program. Trainees utilized industry personnel in the planning and implementation of their respective programs. The utilization of the personnel in the instructional phase of the local programs presented some problems. Release time of personnel from agribusinesses was a problem caused by the season of the year, and the size of agribusiness. However, much progress was made in attaining this objective as the project progressed.

5. Evaluation Objective: To develop trainees' competencies in providing agribusiness programs for disadvantaged students and/or students from low income families.
Information ensuing from the project indicates that much progress has been made in providing trainees with competencies necessary for developing effective agribusiness programs for disadvantaged students and/or students from low income families. The evaluation team feels that great strides have been made by the project under this objective. While a relatively low percentage of these students has been placed in on-the-job training stations, the evaluation team feels that this is simply the result of the program's being in operation for less than one year. These types of students may require several years of instruction before their attitudes and skills are developed to the level required by employers. The very nature of the disadvantaged students does not blend with short-term ("crash") instructional programs. Perhaps it will be two or more years before the effectiveness of this objective can be fully measured. However, preliminary indications are that the project trainees are making progress toward meeting the objective.

6. Evaluation Objective: To develop trainees' competency in coordination of student work experiences in agricultural industries. Information obtained by the evaluation team indicated that the trainees had developed and were utilizing the competencies gained in coordinating each student's classroom instruction and work experiences. This objective was attained by the project.

School-Industry Cooperation in Mississippi

T. V. Majure, Assistant Director
Secondary Vocational Education
State Department of Education
Jackson, Mississippi

Vocational education leaders in Mississippi realize that there has been rapid advancement in achieving balance between agriculture and industry. This balance has created wider opportunities for vocational agriculture in the public schools. The leaders of the vocational agriculture program in Mississippi hold the view that agriculture and industry have not developed as separate entities. Since this is true, one of the most pressing needs facing vocational agriculture is to upgrade the marketable skills of those enrolled in vocational agricultural occupations.

The state department leaders in vocational and technical education in agriculture in cooperation with the agricultural teacher education staff at Mississippi State University initiated what is believed to be an innovative approach to relating classroom instruction and work experience in off-farm agricultural occupations. The ultimate goal is to develop vocational agriculture teachers with sufficient competencies to plan, instruct, coordinate and evaluate programs for preparing individuals for work in off-farm agricultural occupations. In order to accomplish this major goal, the teacher education department set out to develop a professional in-service training program which would offer opportunities for ten selected teachers of vocational agriculture to participate in activities designed to accomplish the following specific objectives:

1. To develop the ability to plan for and utilize non-farm agricultural industries personnel in planning, implementing, and teaching off-farm agricultural occupations.
2. To increase competencies in determining the local outlook and skills necessary for placing students in off-farm agricultural occupations;
3. To develop understanding and competencies required in the organization and operation of off-farm agricultural industries;
4. To develop the competency to plan, implement, instruct, coordinate and evaluate off-farm agricultural occupations programs for disadvantaged students and/or students from low income families;
5. To develop the competency to coordinate student work experiences in agricultural industries and businesses with school instruction;
6. To develop competencies in evaluation and reporting programs in off-farm agricultural occupations.

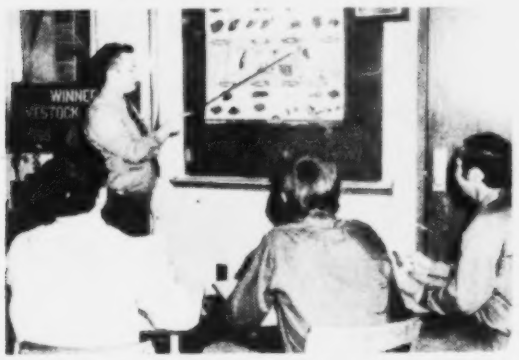
Emmett Williams, left, vo-ag teacher at Brandon High School in the Brandon Implement Company, gaining firsthand knowledge as to what is involved in the operation of the equipment company. Here he was able to determine what he could teach at the school and what should be learned firsthand in the equipment company shop and other departments.

The first step was to have the teachers gain firsthand experiences by working in agricultural businesses and industries in their respective areas. These businesses and industries in effect employed teachers on an interim basis for a period of three weeks or more. The types of businesses and industries where the teachers interned were poultry hatcheries; agricultural equipment sales and services; meat processing and marketing; ornamental horticulture;

Bennie Robbins, Assistant Supervisor
Vocational Agriculture
State Department of Education
Jackson, Mississippi

Ira Duke, left, vo-ag teacher at Raymond High School, in the meat processing plant with Dr. Robert Jones, owner and operator of the Hinds Meat Processing and Locker Plant. Duke receives on the job experience in meat processing technology.

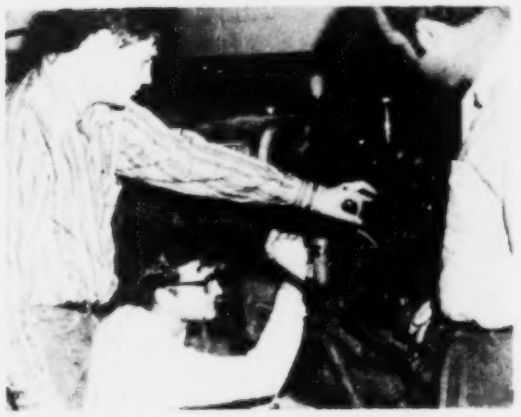
students to arrange their occupational work experience on a part-time or full-time summer basis as, for example, a mechanic's helper in an agricultural equipment and sales business. To make the school instructional program more



Ira Duke in the classroom teaching students activities that he learned in the actual on-the-job work he did at the meat processing plant. Duke's work in the plant enabled him to know what could be taught in the classroom.

meaningful to the student's occupational work experience, every activity to be engaged in as part of the duties at the business is analyzed into learning units. The teacher, with expertise from industry, decides what activities can best be taught in the institutional program, at the school and which activities need to be emphasized when the student is working in the industry or business.

After instruction in the classroom by vo-ag teacher Dukes, the students get on-the-job instruction in the meat processing plant.



Emmett Williams in his classroom and shop at the school, teaching students activities that he learned in the actual on-the-job work he did at the implement company.

agricultural supplies, sales, and services; and, to a limited extent, a highly specialized commercial farm, and agricultural experiment station service workers.

While the teachers were working in the off-farm agricultural businesses and industries, they kept a log of activities engaged in and the competencies developed. Firsthand work experiences became the primary factor in building a course of instruction for the vocational agriculture classes in the schools.

In order to relate the classroom instruction to the off-farm agricultural experience programs, the teachers were encouraged to identify specific job titles available in the agricultural businesses and industries in the area. This helped

After instruction in the classroom by vo-ag teacher Williams, the student gets on-the-job instruction in the parts department of the implement company.

VI

CONCLUSIONS AND RECOMMENDATIONS

Conclusions:

The following conclusions were based upon an analysis of the project.

1. All teacher participants were capable of benefiting from the activities of the project. All teacher participants were highly motivated when they understood the objectives of the project.

2. The State vocational agriculture supervisory personnel were greatly interested in the project as the initial step in implementing instructional programs in off-farm agricultural occupations as a means of enriching the local vocational agriculture program.

3. The acceptance of the project's activities by local agricultural businesses and industries was encouraging. In no case did a business or industry fail to cooperate in providing job experiences when asked.

4. All teacher participants in the projects were primarily interested in course outlines which would aid them in establishing off-farm agricultural occupations programs to fit the needs of the local agricultural businesses and industries. These were as follows: (1) agricultural supply, sales, and services; (2) farm equipment sales and service; (3) poultry feed manufacturing; (4) poultry processing; (5) nursery and garden centers; and (6) meat processing plants.

5. The agricultural equipment sales and service area offered the most extensive opportunity for providing off-farm occupational experiences.

6. Sufficient information was produced by the project to indicate that in any future curriculum development activities in vocational and technical education, educators or researchers should consider the techniques and procedures used in the project in developing competencies needed in implementing off-farm agricultural occupations.

7. The most troublesome problem encountered during the project was that of motivating students to want to work in service type jobs, the area where most of the job opportunities were.

Recommendations:

On the basis of the findings in this project, it is believed that the following recommendations should be considered.

1. All personnel engaged in future curriculum development activities in vocational and technical education should consider the procedure used in this project in developing curriculum guide outlines for off-farm agricultural occupations.

2. Future curriculum material activities should be designed to develop and disseminate job operation sheets, individual study guides, assignment sheets, and suggestive learner activities which will assist vocational agriculture teachers in varying situations to offer agricultural occupations training programs in several areas of the agribusiness complex. Research indicates that with this design for curriculum materials, it would be possible for one-teacher departments to offer self-paced, individualized instruction in more than one area of off-farm agricultural occupations. Emphasis should be given to the above mentioned approach because the number of students who might be interested in each specialized agricultural occupation in many of the State's vocational agriculture departments is minimal.

3. More emphasis should be given to internship type of training in the teacher education program for the preparation of the pre-service trainee and the upgrading of the in-service teacher.

4. An effort should be made by the State and district supervisors to acquaint school administration personnel with the off-farm agricultural occupations programs which are available to local schools.

5. Competent personnel in the local agriculturally related businesses and industries should be utilized in the instructional programs related to off-farm agricultural occupations.

6. Further research should be conducted to determine reasons for the limited number of vo-ag programs preparing students for off-farm agricultural occupations.

APPENDIX A

NARRATIVE REPORT OF FIELD TRIPS TO THREE AGRIBUSINESSES*

On August 12, 1970, ten teachers of agriculture enrolled in a special EPDA Project that was being conducted at Mississippi State University, accompanied by several members of the Project Staff, left the University campus at about 8:00 a.m. to visit three different types of agricultural business establishments. The purpose of the visits was to ascertain the kind of work being done in these businesses by the different employees and to determine the following information: (1) what job, or jobs, in which secondary school students might be interested as a career in agriculture; (2) the kind and amount of preparation (general education, vocational education, and specific job training) is needed for job entry and possible advancement in all of these businesses; (3) the outlook for job entry and advancement by these students in any of the three types of businesses; (4) the approximate pay scale for different jobs; (5) and to begin considering the feasibility of enrolling secondary school students in different types of training encompassed by the preceding criteria.

The group visited three places of business--the Riverside Feed Manufacturing Company at Starkville, Mississippi, the Lowndes County Cooperative, and the Stewart Nurseries, both at Columbus, Mississippi. The three visits--highly informative and educational--occupied most of the day.

FIRST VISIT: THE RIVERSIDE FEED AND FERTILIZER MANUFACTURING COMPANY OF STARKVILLE, MISSISSIPPI

The Riverside Mill manufactures and/or proportions practically every kind of feed and fertilizer used in ordinary farm production. The present establishment is only about four years old, the previous mill having been a much smaller operation. The present mill is truly a modern feed and fertilizer mill with one exception--namely, that the total process is not "programmed" on a computer basis, as is true in some such feed mills today. That is, a person operates a dial panel which proportions the amount of different ingredients which go into a particular feed or fertilizer formula; he works at this panel at all times when the mill is in operation. Feedstuffs are moved from one phase of the processing to another by means of overhead storage bins and a rather elaborate arrangement of conveyors.

The Riverside Mill employs approximately fifty persons. Average renumeration amounts to a minimum of about $100 per week "take home pay." Employment varies somewhat on a seasonal basis. Turnover of personnel is very low; however, several new employees are hired each year. Their present staff appears to be very stable (tenure-wise) compared to the older Riverside Mill.

Educational and Other Personal Qualifications:

Employees in the Riverside Manufacturing Company appear to have average to less than average education, yet every worker is obviously skilled in

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*Report by J. Roland Hamilton, Member of Project Staff.

doing his particular job; some can do more than one type of work involved. The Manager stressed the need for: "a good general education, the more the better." Employees have to be able to read understandingly, although not necessarily rapidly, solve ordinary problems in mathematics, be prompt and dependable, and be able to get along with their fellow employees. Most of the employees must have the temperament of rigorousness in that they must follow formula directions precisely in order to produce a feed or fertilizer that meets both quality and legal requirements. Most of the employees have to be willing to work in virtual isolation much of the time.

Upon being questioned further about employees' training needs, the mill manager stated that by "general education" he also included basic education in certain aspects of agricultural science, such as, a usable knowledge of animal and plant nutrition, soil science, and feedstuffs--especially nutrients (or plant foods) that go into the various manufactured materials and the "source" materials that go into the finished product. Employees have to be capable of thinking in terms of basic principles of mechanics and agricultural economics. One application of the use of mechanical knowledge and skill was well demonstrated by the fact that almost all of the maintenance and repair work needed to keep the mill in "top" working condition is done by regular personnel. In short, a good background in general mechanics is "paying off" for several employees who do not only perform their regular job, but also repair and adjust machinery in the mill as may be required. Such extra repairs and maintenance operations are frequently done during the employees' "off time," but he gets extra pay for this.

The Manager stated that he was eager to use agricultural students on a part-time basis. He said that he has actually searched for vocationally trained persons but had been unable to find many. The Manager stated that he has, in fact, employed several students on either a part-time or full-time basis. He said that he would employ vocationally trained personnel if he could obtain them. Thus far, he has been unable to find enough vocational graduates to meet the demand--that is, from near-by vocational departments. The Manager does employ several students each year, but none of these has been on a "co-op" basis, or any other basis directly involving formal school arrangements.

Conclusions on Mill Operation:

Feed and fertilizer "manufacturing" is now a highly automated and tightly coordinated business, each operation relating to others; thus, the Mill needs a type of employee who is willing to work in a routine situation where every operation is a part of a critically-timed sequence. The employee has to be able to sense and/or diagnose any malfunction of his particular operation or machinery. In short, the employee must be alert and have good self control under conditions involving stress; and he must operate on a rigid schedule accordingly. If one operation in the milling process fails, the whole mill may have to be stopped. Most of the employees have to be able to think in terms of basic principles of mechanics and exact proportioning.

According to the Manager's opinion, and others, the future of the feed-fertilizer business is good--as good as any aspect of agribusiness in the country today. The mill Manager said, "feed and fertilizer mills, in

future years, will need workers with both general education and broad-base vocational education to meet the world's increasing needs for feed and fertilizer. Otherwise, agricultural products may become scarce instead of plentiful."

Most of the training for specific tasks in feed-fertilizer mills must be obtained on the job, since no satisfactory substitute training can be supplied at the school. Feed and fertilizer manufacturers appear to be eager to obtain from vocational agriculture classes trainees who know and understand feedstuff and have the necessary skills to compute formulas for various feedstuffs and fertilizers. Even the office workers need "product knowledge" and "hands-on" type of experience concerning feed and fertilizer and its application to modern production agriculture. The feed-fertilizer business has a "language" all of its own. Supplemental training in business and agricultural economics in addition to the development of skills in personal relations appear to be absolute requisites for advancement in this type of business. A good working knowledge (applicable) of plant and animal nutrition, feedstuff, soils, and economics acquired in formal schooling can help to assure success on the job in a feed-fertilizer business. At least a high school diploma is desirable, but many workers get their skill on the job and do quite well without completing secondary school.

SECOND VISIT: LOWNDES COUNTY COOPERATIVE

On August 12, 1970, the field day for visiting and studying three different agribusinesses continued with a second visit, this time, to the Lowndes County Cooperative, located at Columbus, Mississippi. The Manager of this "farm supply-and-service" business is a former cooperative extension agent, having completed three years of employment in the Lowndes County Co-op at the time of the visit. The organization, operating with a permanent staff of eight to ten employees, sells a vast array of products used in all prevailing types of local farm production, landscaping, gardening, and related enterprises. Literally, hundreds of different types of chemicals and equipment used in controlling weeds, insects, and diseases, and other pests are sold here. This business operates under Federal and State Cooperative Regulations, the owners owning "equity" shares in the company instead of stock. The overall policy of operation is handled by a board of directors and the Co-op manager. The board determines the amount of rebate going to members annually. Some of the profits from the business go into improvement and debt retirement. Such amounts are determined by the state and local boards of directors.

Type of Employee and Educational Requirements:

Employees according to the Manager, have to be able to "sell goods and services and deal with the public well." Employees have to be able to work in a wide variety of different tasks; that is, they must have versatility. Success of the employee is directly related to a good general education, but every employee must also possess a broad-base of "product knowledge" about feeds, seed, fertilizers, chemicals, and some "applied" knowledge of economics (some of this knowledge can be obtained on the job). The employee has to do ordinary mathematical computations. A good background

in basic mechanics is a great asset, especially where it is tied in with calibration and operation of machines for mixing and applying fertilizers and chemicals to fields, lawns, shrubs, trees, animals, et cetera. An increasing proportion of the handling of products sold in agricultural sales and supply establishments is being handled by machines. In short, hand labor is being virtually eliminated. For example, a new fork-lift truck has practically eliminated all of the labor inside the store and warehouse.

The Manager also stressed the need for training in basic business--law, accounting, money management, and related business. For example, a person who aspires to managership of such a business would have to have a good working knowledge of accounting in addition to business-management skill to be a successful manager.

Outlook for Future Employment:

The outlook for sales and services in agricultural supplies is good--as good as the country's economy itself. The public expects to be able to buy somewhere a wide variety of fertilizers, seed, chemicals, hand tools, and innumerable other items needed in farming, landscaping, and keeping buildings and premises in good condition and free of pests and diseases. The co-op store, in many localities, is becoming the main source of information relied upon by the general public for such goods and services. Hence, the employee--especially the sales personnel--has a critical need for product knowledge about a vast array of materials used in landscaping, yard and lawn, gardens, field and forage crops, and animals. Moreover, a large proportion of buyers ask the cooperative salesmen to recommend a product, thus bringing to bear upon him a greater need to "know" and be absolutely sure about the products and services he has for sale.

Opportunities for employment in agricultural sales and services are excellent, not so many at the top but unlimited from the semi-skilled to technician levels. The manager of the Lowndes County Cooperative stated that he has employed in the past, and will continue to do so in the future, vo-ag students on a part-time work-training basis. He stated, in fact, that he would prefer to have vo-ag enrollees or graduates for his prospective full-time employees. Take-home pay averages at least $100 per week for the employees at the Lowndes County Cooperative, and where a commission is added to the basic salary, earnings may be as much as $200 a week or more.

This cooperative does in excess of 500 thousand dollars worth of business each year and has in excess of 300 thousand dollars worth of inventory. Most of the outstanding "equity" obligations have been paid, thus making the business almost debt free. The business facilities have to be continually upgraded and updated. For example, the cooperative owns a bulk-type storage for feed and fertilizer near the railroad and owns several delivery trucks, some of which serve as fertilizer and weed control materials. This warehouse is located at a railroad siding separate from the main business establishment. Bulk-type trucks pick up from the warehouse feed, fertilizer, and/or weed control chemicals, being loaded, of course, by machinery at the place of storage. The driver delivers the product to the place where it is to be used and unloads feed into

(generally) bulk-feeding equipment at the farm or ranch. He also spreads fertilizers and other chemicals on the field for a nominal sum, usually $1.00 to $1.50 per acre for the spreading. Certain types of chemical weed-control materials are spread on the field during the winter. There is also a growing trend toward the pre-application of fertilizer for crops, thus reducing the rush season that comes just prior to planting time when numerous planters have to await their turn for fertilizer and other chemicals to be applied to their fields and pastures. (Experiments have shown that very little nutrient value of fertilizer is lost in pre-application--off season--if the operation is done correctly.)

A large part of the operation of the Lowndes County Cooperative is similar to the operation of other merchandising establishments. That is, products must be uncrated, price marked up for selling, and goods attractively displayed. Selling, at this point, becomes much the same as selling in most merchandising places of business. Of course, convenience of handling products also becomes a vital factor of success by reason of labor required to obtain the needed article, (from its normal location) in order to show it to the customer, selling it to the customer, packaging the product for delivery, making out sales slips, making correct change, using the cash register, and helping the customer to get the product to his conveyance (especially crucial with heavy items such as 100-pound bags of fertilizer.)

Personal Requirements:

Employees in the type of cooperative visited by the class have to be personable--gregarious--liking to work with people but beyond required accommodations, as it were, and put to use a broad base of product knowledge. Such sales personnel have to be valuative in that the salesman must often "size up a stated situation" and have to "prescribe" the best seed, feed, fertilizer, chemical, et cetera, for each case. They have to be rigorous in following the manufacturer's recommendations and cautions. Probably above all, co-op employees must enjoy working with people, thereby deriving satisfaction from rendering good service as opposed to a person with a temperament of isolationism. The most successful salesman in all types of merchandising are gregarious in that they must go far beyond written and oral instructions--must act on their own judgment but without offending the customer.

According to the Manager, high school education is desirable--even college education--including ability to think in terms of money management, to apply a wide variety of "product knowledge" (basic agriculture) to numerous situations, and to make a favorable impression on the customer so that the latter will come back again. Needless to say, strict honesty is a first requisite for working in sales and service establishments. The slightest tendency to be dishonest would disqualify a person in sales work.

The Manager stated that there is plenty of room at the "top", but only for those who desire to make their life work a business of this type--no "fly by nighters." There are also plenty of jobs available for "run-of-the-mill" workers. Good employees are "hard to find and hard to keep," so stated the manager. He also stated that hours are long for the ambitious worker; however, adequate opportunity for advancement is available

for those who have necessary qualifications, is patient, and really tries.

The mis-management of money--even one serious mistake in handling operating capital--could result in a dangerous set-back for the business, maybe even bankruptcy. The Manager of the Lowndes County Cooperative recommended that prospective employees get a good grounding in general education, especially practical grammar, economics, mathematics, a thorough working knowledge of basic agriculture, and by all means, get as much accounting as possible.

VISIT TO AND FIELD STUDY OF STEWART NURSERIES

After visiting the Lowndes County Cooperative, the class met Mr. W.R. Hough, Manager of the Stewart Nurseries, at 1:30 p.m., August 13, for a conducted tour of the several sections of a large and somewhat specialized nursery (Stewart's). The objective was not only to observe firsthand the operations and jobs involved in the daily routine being followed, but also to find out as much as possible the numerous details of each job studied.

The Business:

This nursery is one of the largest of its kind in the world, catering to a highly specialized market, operating almost exclusively on a wholesale basis. The Manager, Mr. W.R. Hough, formerly owned and operated a flower shop in down-town Columbus, Mississippi and also managed a large field nursery which is now closed. (His wife operates a garden center in Columbus.) The Manager has a B.S. degree in Horticulture from Mississippi State University. He stated that some formal education in business, which he did not get, would have "paid big dividends" to him.

The Stewart Nursery grows, from the greenhouse stage, a wide variety of shrubs to normal planting age and stage. All nursery stock is grown out in cans which are changed from one can size to larger ones as needed, until the shrubs are ready for planting. Cans are spaced in a leveled field, in rows, much as shrubs were formerly grown in the field--i.e., in rows--but planted directly in the soil instead of containers. The change to "can-type" culture is practically industry-wide now because of labor savings, better control of shrubs under different conditions, and easier control of diseases and insects.

The Stewart Nursery is "pioneering" in several variations from usual, or standard, procedure in nursery work. The largest single new and unique process is the growing and marketing of azaleas as a flower crop rather than as shrub.

Briefly, azaleas are grown from "liners" (rooted and purchased elsewhere) under controlled conditions so that the shrubs can be made to flower at any pre-determined time--for example, Thanksgiving, Christmas, Mother's Day, et cetera. The entire production--80,000 plants per year--has already been committed to market through 1972. A special spray, instead of pruning by hand, serves as a top pruning to make the plants "bushy" and thick. At a particular stage the azaleas are put in cold

storage for several weeks. This forces the plants into dormancy and they remain in this stage for several weeks.

Another new process which saves about two years in length of growing time of Pyracanthaes is being done at Stewart's Nurseries. Briefly, this new type of production consists of propagating plants from mature cuttings about 18 inches in length (usual cutting is five to six inches). The cuttings are set in pots filled with growing media which is then kept wet by timed sprinklers. If cuttings are kept wet, and other factors are favorable, about 85 to 90 percent of these large cuttings survive. As soon as the root system is sufficiently matured, the new plants are then transferred to field-size cans and are then placed in the nursery field until ready for sale. A salable plant can be produced in one growing season instead of two or three.

Other shrubs (most of the varieties that are commonly used today) are grown in the "usual" manner--i.e., some from cuttings, some from seed, some from purchased "liners," but most are set in cans and placed in the nursery fields in the usual manner. Shrubs are removed from the can and placed in specially constructed cartons for shipping which is done mostly by truck lines (azaleas are shipped mostly by air freight.)

Value of Total Inventory:

The total investment in the Stewart Nurseries at Columbus was not ascertained, but the total worth was estimated, by the Manager, to be in excess of one million dollars. The class members did find out that the azalea crop (for flowers) is sold wholesale for three to four dollars ($3 - $4) each, thus figuring out to be about 240 thousand to 320 thousand dollars gross sales for one crop alone. The Manager stated that they are in the process of doubling their present azalea production.

The Employees:

At the time of the visit, the Stewart Nurseries had on their payroll about eighty (80) persons. Most of the employees were classified as "field workers" who handle shrubs in various ways as needed. On the day of the visit, the field workers were weeding the shrubs in the field--weeds growing out of the tops and sides of the cans. Weeding in can-type culture (in the can itself) has to be done by hand. Some of the employees work on a seasonal basis, not year-round; however, a good portion of the work force is employed year-round.

Field foremen (two) supervise the work in the nursery field, including the transplanting of shrubs from one size can to another, preparing nursery fields for growing stock, treating the soil for weeds, mulching, placing cans in proper place, watering, and weeding the growing stock (some weeding has to be done by hand).

Propagators:

Two crews of workers, each with a supervisor, make cuttings, set cuttings in pots or cans filled with growing media, place the plants in the greenhouses, prune and trim young plants as needed, and perform other

operations involved in getting the propagated stock ready for moving into the nursery fields. One example of special care that has to be given to the operation of making Pyracantha cuttings (large size--18 inches) is not only to cut the stock properly for rooting but to have the workers take great care not to get pyracantha thorns embedded in their hands or fingers because the thorns are extremely difficult to remove. Thus an embedded thorn can render a worker partially "disabled." He is then a liability to the nursery. Special instructions as to how to perform the Pyracanthae operation are given to each employee.

Aside from the education and specialized training required by nursery field supervisors, greenhouse supervisors, and the general manager, the Stewart Company workers do not require a great deal of special training. They need enough general education to be able to follow instructions closely. They need to be able to get along well with people, since the nursery crew is large and employees work in groups close to each other.

Nursery field workers need "product knowledge" about plants, weeds, soil, water requirements for plant growth, some workable knowledge of plant diseases and parasites, and skill in handling plants into and out of cans. Good finger dexterity and coordination, plus good eye sight are special "personal" trait factors needed to do the several jobs in the nursery fields. These "general" workers must be submissive to the point of taking and carrying out orders from a supervisor.

Greenhouse Workers need "product knowledge" about plants, soil and other growing media, greenhouse pots and other containers, water requirements and watering procedures, some working knowledge about plant diseases and insects (especially the ability to detect such) general greenhouse operating procedures, and skill in making cuttings and doing other operations involved in propagating plants and operating greenhouse equipment.

Greenhouse workers need great finger and hand dexterity, good eyesight, and must be rigorous in carrying out exact instructions for doing various operations where even one mistake can be "fatal" to a particular crop. Since these workers live and work in close proximity to each other, they have to be able to get along with other people. These workers also have to have a submissive temperament in taking and carrying out orders.

Supervisors and Nursery Manager:

The Manager of the Stewart Nursery holds a college degree in horticulture and has had over twenty-five years of experience in nursery and flowershop operation. The vast knowledge of a technical nature as well as business acumen, would almost demand that this occupation be classified as a college-career-job. Mr. Hough has clerical and business help, but he personally has to make decisions involving large sums of money. He stated that anyone interested in nursery work at the managerial level should go the "college route" and make certain that he obtains adequate training in business management, including money management.

As for supervisors, Mr. Hough stated that "this type of job can be done by non-college trained personnel, but a college degree is desirable."

The supervisor (nursery field work and/or greenhouse) must acquire a vast amount of practical working knowledge about plants and plant growth, propagation, plant nutrition, plant diseases and pests (and how to control each), chemicals, facilities and equipment needed in nursery and greenhouse work (et cetera) soil (nature of soil, growing media, soil impurities, fertilizers, sterilizers, soil temperature, soil moisture in relation to plant culture, et cetera, materials used in construction, costs of materials, construction skills, operation of equipment, including cooling, heating, ventilation and irrigation, use of numerous items of equipment, such as cans, pots, sprayers, et cetera - as these items relate to nurseries and greenhouses.

Temperaments. The supervisor must be valuative in making judgments about disease and pest symptoms, growth indicators, when to heat, cool, ventilate, et cetera. He must also be rigorous in following practices of a crucial nature in various nursery and greenhouse operations: when is a cutting properly made? Does a particular medium produce poor rooting? Is the lack of root growth caused by something else other than rooting media? What are the symptoms of various diseases? What insects and pests must be identified and treatment prescribed? He has to be "right" when answering these questions.

The supervisor needs to have a working knowledge of economics (in relation to his own situation) and he must be able to manage personnel under strict working conditions of stress that can and do arise at unexpected times. They must have a wide range of knowledge about plants and know their special characteristics.

General. Supervisors and managers need a broad base of working knowledge and some skill in several areas of mechanics, such as electricity and electrical controls, irrigation and irrigation equipment, general construction skill, ability to oversee and/or repair and maintain various types of machinery and equipment.

Outlook For Future Employment. The outlook for nurseries and greenhouses is good although competitive. Operations are tending to become larger, and nurseries and greenhouses have to be operated on a sound basis. There will be many job openings in the future, especially for technical and semi-skilled personnel. The Manager of the Stewart Nurseries stated that he "would be willing to take students on a part-time and/or co-op basis for job training". Thus vocational agriculture departments would do well to look into situations such as the Stewart nurseries and greenhouses for possible placement of their students.

Further study also shows that outlook for employment in the nursery and greenhouse fields is limited except for semi-skilled field workers. There is, however, an increasing demand for practical landscape and lawn workers (closely related to nurseries and greenhouses as an industry) at several levels - from an owner-operator to semi-skilled workers. Many "private" yard and lawn service businesses are coming into existence. This is perhaps caused by the gross ignorance of the "average" homeowner who wants and needs to have a good-looking dwelling, well landscaped and a nice lawn but does not know how to do it himself. Others want to grow flowers, and some would like to have vegetable gardens and fruit trees - an area closely related to nurseries and greenhouses.

APPENDIX B

MISSISSIPPI STATE UNIVERSITY

Department of Agricultural Education

(Special Vo-ag Project)

RECORD OF ON-JOB EXPERIENCES IN AGRICULTURAL BUSINESSES AND INDUSTRIES

Type of Business or Industry _____

Name of Business or Industry _____

Teacher's Name _____

ACTIVITY ENGAGED IN (List only one per page)	COMPETENCIES DEVELOPED (Knowledge and Skills)

Estimated time spent on this activity ----------hours

APPENDIX C

COURSE OF STUDY FOR AGRICULTURAL
SUPPLY--SALES AND SERVICE OCCUPATIONS

AREA OF INSTRUCTION	TRAINING ACTIVITIES
I. Exploring occupational opportunities in agricultural supply--sales and service.	1. Through investigation of existing conditions, student will determine kinds of employment available in agricultural supply--sales and service, including salaries, working conditions, etc.
	2. Through visitation with owners and proprietors, student will determine qualifications to enter employment on various levels of employment.
	3. Through classroom study and analysis, student will determine opportunities for growth in agricultural supply--sales and service occupations.
II. Understanding human relations in the area of agricultural supply--sales and service.	1. Through classroom study student will become familiar with different personality traits of people.
	2. Through work experience in some business firm or agricultural industry, determine to what extent the employees have to deal with the public.
	3. Through classroom study and work experience in agriculture business, agriculture industries, etc., student will develop ability to communicate effectively with prospective employers.
	4. Through interviews with owners, personnel directors, etc. or agriculture businesses and industries, student will determine what personal traits are desired in employees. Student will rate himself and a few volunteer members of the class on these traits.
	5. Through activities in student organizations, the student will develop personality traits which will be helpful in meeting and dealing with the public.

COURSE OF STUDY FOR AGRICULTURAL
SUPPLY--SALES AND SERVICE OCCUPATIONS (CONTINUED)

AREA OF INSTRUCTION	TRAINING ACTIVITIES
III. Understanding business procedures.	1. Through study and work experience in a business establishment, student will develop an understanding of: A. Kinds of records kept in the business establishments. B. The importance of complete and accurate records in the efficient operation of a business. C. Kinds of sales tickets in use. D. The importance and use of credit in a business operation. E. Discount policies. F. Mark-ups for retail sale. G. Kinds of business forms used in ordering and receiving merchandise. H. Kinds of reports that have to be made to the government and other agencies.
	2. Through work experience in a business establishment, student will develop ability to: A. Make a business inventory. B. Receive and store merchandise properly. C. Properly mark items for sale. D. To keep business stocked properly. E. Ability to make sales ticket effectively.
IV. Agricultural salesmanship.	1. Through classroom study and observation of salesmen, student will learn: A. What attributes are possessed by good salesmen. B. The correct sales approach. C. How to handle customer complaints. D. What employers expect from their salesmen.
	2. Through work experience in a sales establishment, student will become proficient in selling.
V. The organization and functions of agricultural businesses.	1. Through classroom study and interviews with agricultural business managers, student will determine: A. How the various agricultural businesses are organized.

COURSE OF STUDY FOR AGRICULTURAL
SUPPLY--SALES AND SERVICE OCCUPATIONS (CONTINUED)

AREA OF INSTRUCTION	TRAINING ACTIVITIES
	B. Differences between private ownership, cooperative, and corporations. C. Functions performed by different types of agricultural businesses.
VI. Feed businesses sales and services.	1. The student, through classroom study and work experience in a feed business, develops: A. An understanding of the basic economics of a feed business and livestock feeding programs. B. An understanding of livestock feeds and their value. C. An understanding of basic animal nutrition (If not adequately covered in years 1 and 2.) D. The ability to formulate a grain ration for different kinds of livestock. E. An understanding of the different methods used to prepare feeds. F. An understanding of the methods used and trends in mechandizing feeds. G. An understanding of the regulations governing the formulating, labeling and using of feeds.
VII. Fertilizers sales and service.	1. Through classroom study, interviews with agricultural leaders, students will determine: A. The economic importance of fertilizer in the area. B. The kinds of soils in the area and the common soil deficiencies. C. The fertilizer practices of farmers in the area. D. The recommended fertilizer practice for the area.

Note: Some of this should have been taught during first and second year vocational-agriculture. If not, a study of basic principles of soil and fertilizers should be provided for here.

2. Through classroom study and work experience in a business establish-

COURSE OF STUDY FOR AGRICULTURAL
SUPPLY--SALES AND SERVICE OCCUPATIONS (CONTINUED)

AREA OF INSTRUCTION	TRAINING ACTIVITIES
	ment, student will become familiar with: A. How fertilizer is sold. B. Kinds of fertilizers commonly used, meaning of analysis, etc. C. How price is determined. D. How fertilizer is inventoried. E. Pricing procedure, margin of profit, discounts, etc. F. Kinds of records kept. G. Regulations governing the labeling of fertilizers. H. Methods and trends in merchandising fertilizers.
VIII. Agricultural chemicals--sales and service.	1. Through classroom study and work experience in an establishment where agricultural chemicals are sold, student will: A. Determine the economic importance of agricultural chemicals in modern agriculture. B. Develop ability to properly identify pests that are prevalent in the area and the damage done by each.
Note: This subject matter is absolutely essential for this unit. If this subject matter has not been taught, it should be included here.	
	C. Identify areas of responsibilities of the sales personnel in determining the correct pesticide used for different pests. D. Determine the hazards in incorrect use of pesticides, and legal restrictions. E. Determine the importance of correct application of pesticides. F. Develop an understanding of the safe handling, storage, and use of all agricultural chemicals sold through the firm. G. Develop ability to understand literature and lables pertaining to pesticides. H. Develop ability to effectively merchandize agricultural chemicals.

COURSE OF STUDY FOR AGRICULTURAL
SUPPLY--SALES AND SERVICE OCCUPATIONS (CONTINUED)

AREA OF INSTRUCTION	TRAINING ACTIVITIES
IX. Miscellaneous agricultural supplies-sales and service.	1. Around metropolitan areas there are opportunities for working in agricultural supply firms dealing with seed distribution for lawn, garden, small packaged fertilizers, small items of equipment, etc. Developing effective training activities for these should be approached in much the same manner as has been suggested under other occupations.

COURSE OF STUDY FOR AGRICULTURAL
MACHINERY--SERVICE OCCUPATIONS

AREA OF INSTRUCTION	TRAINING ACTIVITIES
I. Exploring opportunities in agricultural machinery occupations.	1. Through classroom study and visitation to agricultural machinery establishments, student will determine job opportunities in this field. A. Qualification for entry. B. Opportunities for advancement, etc.
II. Understanding tractors and tractor systems.	1. Through classroom study and on-the-job work experience in agricultural machinery dealerships, student will: A. Develop an understanding of the basic principles of the operation of an internal combustion engine, including a study of the function of each major component of the engine. B. Develop an understanding and working knowledge of: (1) The power train (2) The fuel system (3) The cooling system (4) The electrical system (5) The hydraulic system (6) Lubrication system (7) Traction system (ex. wheels, steering, tire case, etc.) (8) Clutch (9) Brakes
III. Tractor tuneup and maintenance.	1. Through classroom study, school shop practice, and supervised work experience in agricultural machinery dealer establishments, student will develop competency in: A. How to check and correctly adjust valve clearance. B. How to check, adjust and tune tractor ignition system. (1) Timing distributor (2) Timing magneto (3) Battery service (4) Checking, cleaning, and adjusting spark plugs. (5) Checking, installing, and adjusting breaker points.

COURSE OF STUDY FOR AGRICULTURAL MACHINERY--SERVICE OCCUPATIONS (CONTINUED)

AREA OF INSTRUCTION	TRAINING ACTIVITIES
	(6) Checking and repairing lighting system. C. How to check, adjust, and maintain air, fuel, and exhaust systems. (1) Checking and servicing air filter. (2) Checking, cleaning and adjusting carburetor. (3) Checking and cleaning sediment bowl. (4) Checking, cleaning, and repairing fuel lines. (5) Checking manifold and exhaust system. D. How to check and service cooling system. (1) Flushing radiator. (2) Replacing and adjusting fan belt. (3) Selecting and adding coolant. (4) Checking for and stopping leaks. (5) Checking grill and exterior parts of radiator. (6) Checking, replacing, and adjusting thermostat. E. How to maintain and adjust tractor power train. (1) Checking and adjusting clutch (hand and foot operated). (2) Checking and servicing the drive train-transmission, differential, and final drive. F. How to check, replace parts, and adjust braking system. G. How to maintain steering mechanism and wheels. (1) Checking wheel alignment. (2) Checking tires. (3) Checking and servicing frontwheel bearings. H. How to maintain the lubricating system.

COURSE OF STUDY FOR AGRICULTURAL
MACHINERY--SERVICE OCCUPATIONS (CONTINUED)

AREA OF INSTRUCTION	TRAINING ACTIVITIES
	(1) Checking oil level, draining and flushing engine crankcase. (2) Checking and replacing oil filter. (3) Selecting proper lubricants. (4) Servicing pressure-type grease fittings and other points of lubrication not specifically covered under other systems.

*Suggestion to the teacher. It is suggested that each student be required to demonstrate that he can correctly perform a complete engine tuneup and perform the maintenance functions of all systems outlined above. Where synamemetor is available, the student should be taught how to use it in performing the tune-up operation.

IV. Assembly, adjustment, maintenance, and repair of land preparation equipment.	1. Through classroom study, school shop practice, and work experience in agricultural machinery dealers' establishments, student will become familiar with: A. Types of land preparation equipment and their component parts. B. Purposes for which equipment is used and factors governing use. C. Procedure for adjusting and operating land preparation equipment safely and efficiently. 2. Through school shop practice and directed work experience in dealer establishments student will: A. Assemble, adjust and operate: (1) Trailor-hitch moldboard plows. (2) Mounted tractor-operated moldboard and disk plows. (3) Two-way moldboard plows. (4) Multiple-bottom plows. (5) Multiple-disk plows. (6) And other land preparation equipment used in the area. B. Learn servicing and maintenance procedure on all land preparation equipment used in the area. C. Assist in the repair of land preparation equipment brought into the shop for repair.

COURSE OF STUDY FOR AGRICULTURAL
MACHINERY--SERVICE OCCUPATIONS (CONTINUED)

AREA OF INSTRUCTION	TRAINING ACTIVITIES
V. Assembly, adjustment, maintenance, and repair of crop planting equipment.	(The same general training activities as suggested under IV above will apply to areas V, VI, VII, and VIII.
VI. Assembly, adjustment, maintenance, and repair of cultivating equipment.	
VII. Assembly, adjustment, maintenance and repair of harvesting machinery.	
VIII. Assembly, adjustment, and repair of spraying and dusting equipment.	
IX. Tractor engine overhaul.	1. Through classroom study student will become familiar with construction of tractor engines (gasoline) parts and component parts. A. Crankcase B. Cylinders C. Cylinder head D. Crankshaft E. Flywheel F. Pistons G. Connecting rods H. Camshafts I. Valves and valve operating mechanisms. 2. Through school shop practice and supervised work experience, student will develop competencies in tractor engine overhaul by assisting in overhauling tractor engines which are brought into the school and dealer service shops. For the more advanced students, a complete overhaul job may be assigned the student with head mechanic supervising.

*Note: When the opportunity is available, and the local conditions warrant, the same study and practice procedure will be followed for diesel engines.

COURSE OF STUDY FOR AGRICULTURAL MACHINERY--SERVICE OCCUPATIONS (CONTINUED)

AREA OF INSTRUCTION	TRAINING ACTIVITIES
X. Organization and management of agricultural machinery dealerships.	1. Through classroom study and work in agricultural dealership firms, student will develop an understanding of: A. How a dealership is organized. B. The importance of the retail agricultural machinery dealerships. C. How the agricultural machinery and parts are ordered and how they are moved from manufacturer to customers. D. Job titles and job functions in the organization of a retail agricultural machinery dealership. (1) Areas of operations (examples - management, parts, sales, service, etc.) (2) Duties of persons working in each job title. E. How agricultural machinery dealerships are financed. (1) Credit sources. (2) Financing time sales. (3) Discounts, etc. F. Policy regarding selecting, training, and compensating employees. (1) How selected. (2) Training policy. (3) Compensating employee fringe benefits. (4) Employer-employee relationships.
XI. Service department operating procedure.	1. Through classroom study and work experience in agricultural machinery dealerships, student will develop an understanding of: A. Service shop organization, personnel organizations, etc. B. How charges for services are determined. C. Efficient shop layout. D. Shop safety practices. E. Service shop cost factors. F. Policies governing the providing of field service for customers.

COURSE OF STUDY FOR AGRICULTURAL
MACHINERY--SERVICE OCCUPATIONS (CONTINUED)

AREA OF INSTRUCTION	TRAINING ACTIVITIES
XII. Parts department operating procedure.	1. Through classroom study and work experience in agricultural machinery dealerships, student will develop competencies in: A. Classifying parts. B. Inventorying parts. C. How to lay out a parts department. D. How to control parts inventory. 2. Through work experience in parts department of a dealerhsip, student will become familiar with: A. How parts are ordered. B. Principle policies on parts. C. Kinds of records kept. D. Procedure concerning obsolescence. E. Discount procedures. F. Working relationships with service department.
XIII. Merchandizing agricultural machinery.	1. Through classroom study and work experience in an agricultural machinery dealership, student will become familiar with: A. The selling program of the establishment. B. Competencies needed by salesmen. C. Personal characteristics of effective salesmen. D. Sales approaches made by salesmen. 2. Through classroom study and work experience with a salesman, student will learn: A. How attitude influences sales. B. How to determine the kind of machinery used in the area. C. How to appraise machinery traded in. D. How prospects are located. E. How salesmen overcome price resistance. F. When to cut prices. G. How to hold old customers and add new ones.

COURSE OF STUDY FOR AGRICULTURAL
MACHINERY--SERVICE OCCUPATIONS (CONTINUED)

AREA OF INSTRUCTION	TRAINING ACTIVITIES
	H. Things, or characteristics that customers don't like about salesmen. I. How to put on an effective sales demonstration. J. How to prepare a sales report. K. The pricing policy of the establishment. L. How salesmen are compensated. M. Company policy on machinery rentals, rental contracts, etc.

COURSE OF STUDY FOR ORNAMENTAL HORTICULTURE OCCUPATIONS

AREA OF INSTRUCTION	TRAINING ACTIVITIES
I. Exploring occupations in horticulture	1. Through investigation of the present situation, determine employment opportunities in horticulture, including salaries, working conditions, etc.
	2. Through visitation to businesses, etc., determine qualifications for entry in horticultural occupations.
	3. Through study and analysis, determine opportunities for growth in horticultural occupations. (Correlate with Section II, Area I, V in the Teachers Handbook.)
II. Identifying horticultural plants and determining their characteristics.	1. Use specimens to familiarize students with the common and scientific names of commonly used horticultural plants.
	2. Student make and bring to class a collection of species of horticultural plants; identify and note general characteristics.
	3. Through field trips or on-the-job training, familiarize student with important characteristics of horticultural plants. (Size, color, shape, growth, habits, berries, flowers, special adaptation.) A. Trees B. Shrubs C. Herbacious, annuals, and perenials.
III. Developing a landscape plan. (This area to be for advanced students only.)	1. Through classroom procedure and field trips, familiarize student with the basic principles of landscaping for: a residence, including public, private, and service areas, same activities for parks and other public areas.
	2. Student read and interpret blueprints of buildings.
	3. Student make list of errors in a home landscape.

COURSE OF STUDY FOR ORNAMENTAL
HORTICULTURE OCCUPATIONS (CONTINUED)

AREA OF INSTRUCTION	TRAINING ACTIVITIES
	4. Student develop landscape plan for a residence. A. Make a sketch of existing features, then draw to scale outlines of buildings, border lines, walks, drives, etc. B. Designate plants to be left or relocated. 5. Make plantings according to the landscape plan for a residence. 6. Student develop other landscape plan for: A. A neighbor B. School C. Church D. Other
IV. Developing and maintaining lawn and turf-grass areas.	1. Student, through classroom and laboratory procedure, prepare soil for lawn and turfgrass areas. A. Selecting suitable grass. B. Establishing sod. C. Maintenance of lawn and turf-grass areas. (fertilizing, controlling pestsand diseases, and mowing.) D. Watering.
V. Constructing and maintaining horticultural structures and facilities.	<u>GREENHOUSE</u> 1. Through classroom, laboratory, and field procedures, student engage in the following: A. Select site for greenhouse. B. Study greenhouse designs. C. Select materials (plastic or glass). D. Select and install heating and ventilation system. E. Select and install irrigation system. F. Select and install electrical system. 2. Construction of greenhouse and installation of above systems. 3. Maintenance of structures and above systems.

COURSE OF STUDY FOR ORNAMENTAL
HORTICULTURE OCCUPATIONS (CONTINUED)

AREA OF INSTRUCTION	TRAINING ACTIVITIES
	LATH HOUSE 1. Through classroom, laboratory, and field procedures, student engage in the following: A. Select site for lath house. B. Study lath house designs. (1) Select materials for lath house. (2) Select and install irrigation system. C. Construction of lath house and above systems. D. Maintenance of lath house and above systems.
VI. Selecting, preparing, and using growing media.	1. Through classroom, laboratory, and field procedures, student engages in the following: A. Determine characteristics and suitability of various growing media (ratio of materials. Ex. 1/2 peat; 1/2 sand) B. Selection, preparation, and use of growing media. C. Study of soil origin and composition and its importance as applied to production. D. Determine suitability of various soils for growing horticultural plants. E. Evaluate and use effectively soil conditioners. F. Determine how soil structure effects watering practices. G. Evaluate and use effectively soil mulches. H. Recognize and maintain proper fertility level (fertilization) of plant growing media as required for good plant growth.
VII. Propagating horticultural plants.	1. Through classroom study, laboratory and field procedure, develop in student the ability to: A. Produce various plants from seed. B. Produce plants from cuttings. C. Produce plants from layering.

COURSE OF STUDY FOR ORNAMENTAL
HORTICULTURE OCCUPATIONS (CONTINUED)

AREA OF INSTRUCTION	TRAINING ACTIVITIES
	D. Propagate by budding and grafting. E. Select or build suitable propagating containers and equipment.
VIII. Planting desired shrubs of the landscape plan.	1. Through classroom study and directed work experience, each student should develop the ability to select a site and prepare soil for setting plants (including soil test and fertilization recommendation.) 2. Through on-job-training each student develops skills as follows: A. Select suitable plants. B. Dig hole to proper depth and width. C. Place plant in hole and position it correctly. D. Fill hole with soil. E. Pack soil and other media. F. Water plant after hole has been filled. G. Mulch plant. H. Other. 3. Through classroom study and directed work experience, how to maintain the landscape should be learned: A. Pruning, fertilization, mulching, and irrigation. B. Cultivating different plants. 4. Through classroom study and directed work experience student will: A. Make a collection of bulbs, rhizomes, and corms suitable for putting in a landscape plan. B. Become familiar with principles and procedures involved in planting by planting a collection of bulbs, rhizomes and corms.
IX. Controlling insects and diseases in horticultural plants.	1. Through classroom study, laboratory procedures, and on-the-job training, student will: A. Make collection and identify insects harmful to shrubbery and flowers.

COURSE OF STUDY FOR ORNAMENTAL
HORTICULTURE OCCUPATIONS (CONTINUED)

AREA OF INSTRUCTION	TRAINING ACTIVITIES
	Also identify diseases that attack horticulture plants. B. Learn the effect of various chemicals on different shrubs and flowers. C. Formulate various spray solutions for insect and disease control. D. Make list of hazards involved in use of chemicals. E. Make a list of safety precautions to observe in use of chemicals. F. Make contact with State Plant Board to secure policies, and laws regulating the control of diseases in ornamental horticultural plants. G. Practice insect and disease control on plants at home and on the job.
X. Selection, use, and care of horticulture equipment.	1. Through classroom procedures, familiarize student with basic principles, characteristics, and cost of horticultural equipment. 2. By cooperative arrangements and on-the-job experience, have student learn to operate and maintain the following: A. Cultivating equipment. B. Digging equipment. C. Dusting and spraying equipment. D. Irrigating equipment. E. Mowing and mulching equipment.
XI. Harvesting and preparing ornamental horticulture plants for market.	1. Through on-the-job training familiarize student with the following: A. Balling and Burlapping field-grown plants. B. Grading plants. C. Labeling plants by their correct name. D. Caring for plants after balling and burlapping. E. Caring for plants in the marketing center. (1) Canned plants. (2) Balled and burlapped plants. (3) Preparing plants for carry-over to next marketing season.

COURSE OF STUDY FOR ORNAMENTAL
HORTICULTURE OCCUPATIONS (CONTINUED)

AREA OF INSTRUCTION	TRAINING ACTIVITIES
XII. Managing ornamental horticulture businesses.	1. Through classroom study and directed work experience familiarize students with: A. The basic factors that effect a horticultural business. B. The kind of basic records kept in a horticultural business. C. Purchasing procedures used in the horticultural businesses. D. Merchandizing procedures for products and service. E. Types of business organizations in ornamental horticulture: for example, individual proprietorships, partnerships, etc. 2. Through classroom study and consultation with horticultural business managers, familiarize student with: A. Insurance problems. B. Source and use of credit sources. C. Procedures used in hiring and managing employees. D. Business laws applicable to horticultural businesses. E. Reporting and paying federal, state, and local taxes. F. Kinds of markets and marketing methods. Example, wholesale marketing, retail marketing, mail order sales, etc. G. Trade organizations and government agencies.